





COLONIAL BUILDINGS, CANNON-ST., LONDON, E.C.

Advertisements, Remittances, Subscriptions, Orders for Copies, and all communications must be addressed to "THE PUBLISHER" of THE CHEMIST AND DRUGGIST.

Cheques and Post-office Orders to be made payable to Edward Halse, and crossed Martin & Co.

No one is authorised to collect money without production of the Proprietors' lithographed form of receipt.

Receipts not forwarded for sums under 10s., unless the remittance be accompanied by a stamped envelope.

SCALE OF CHARGES FOR ADVERTISEMENTS.

One Page	£5 0 0
Half ditto	2 15 0
Quarter ditto	1 12 0

Special Rates for Wrapper, and the pages preceding and following literary matter.

The above Scale of Charges will be subject to a discount of 10 per cent. upon Six, and 20 per cent. upon Twelve insertions.

Seven Lines and under	0 4 6
Every additional Line	0 0 6

Advertisements of Assistants Wanting Situations (not exceeding 12 words) inserted at a nominal charge of 1s. each.

All Advertisements intended for insertion in the current Month must be sent to THE PUBLISHER of THE CHEMIST AND DRUGGIST on or before the 12th, except Employers and Assistants' Advertisements, which can be received up to 10 a.m. on the morning previous to publication.

OUR COUNTRY AND COLONIAL SUBSCRIBERS are requested to furnish any trade gossip that they may consider interesting.

Subscribers are requested to observe that, for the future, the receipt of THE CHEMIST AND DRUGGIST in a *Green Wrapper* indicates that with that number the term of subscription has expired, and that no further numbers will be sent until the same has been renewed. We issue the notice very respectfully, not that we distrust our Subscribers, but simply because we find it impossible to keep an immense subscription list like that we now have, extending to almost every town in the world, in order without an exact system like this.

Editorial Notes.

THE old proverb that "two of a trade can never agree" has been sadly too true in times past; but as far as chemists and druggists are concerned, we can hopefully regard the signs of the times, and see that its application is becoming almost daily more limited. Local associations, conferences, and trade journalism have all worked towards the annihilation of absurd prejudices and jealousies, and fraternization has become so usual among us, that it is not easy to find any but a trite way of expressing our annual congratulations to each other. But regardless of the form of expression, it is good for us, outwardly united as we are by the bonds of common pursuits and common interests, to assure each other and to be assured of that mutual sympathy which should unite us stronger than any trades' union league. No iron links can rivet men together so firmly as the fragile thread of sympathy. That "union is strength" is true, but it is only the shell of the truth which we attempt to convey; we find when we reach the kernel that it is sympathy that is strength, and sympathy that secures all the union that is worth having. Every victory of right or wrong has been accomplished by the overwhelming power of mutual sympathy; with it the few triumph, without it multitudes are powerless. As each new year comes round, an opportunity presents itself for all of us to join heart and hand more cordially in the various works which we do in common. Heartily let us express our congratulations as the new year opens, wishing all our friends happy and prosperous months; but let us not stop here. Let the year find us anxious to make the best of every opportunity to help others as well as ourselves—to help them sometimes even by sacrificing ourselves. Fraternal greetings from London to Liverpool, and from Liverpool to Baltimore, are cheering and strengthening, and these are worthy of special occasions. But there is a

noble work for each to do day by day. He is a poor business man whose time is entirely occupied in getting his own living. Let all try to make the new year happy and prosperous for those around them as well as for themselves, and besides merely wishing it, let us work for that end generously and earnestly, and some day this world will not be such a den of wild beasts as it has appeared of late.

We hope to be able during the present volume to complete a series of sketches of the legal and social position of chemists and druggists in all parts of the world. We commence with the continent of Europe, and for the first notice select the Papal States, the Government of which has just been swept away into infinite space, as Carlyle would say, and is rapidly entering the regions of oblivion. While it is not yet quite out of sight, it is pleasant to be able to find one good word to say of it, and our contributor has found several things to praise in its manner of administering pharmaceutical laws.

In order to extend the interest taken in our prize lists, we have decided to alternate with our "Corner for Students" a series of other competitions, literary and artistic, so that others besides those who devote themselves to the study of chemistry may take part. We have not completed our programme, but the arrangements up to May stand thus. This month we print questions in pharmaceutical chemistry as before; the answers to which will be published and the prizes awarded in our March issue. We now offer a prize of two guineas for the best essay on "Business Habits" which shall reach us before February 10th. The prize essay will be printed in our next number, and the competition is open to all the world (past and present members of the Pharmaceutical Council and regular contributors to this journal only excepted). Each essay must bear a distinguishing motto, and must be accompanied with a note bearing the same motto outside and the real name and address within. In March, as we said, the "Corner for Students" will re-appear, with questions to be answered for May; and in the April number we hope to engrave a prize design of the best style of display of a druggist's shop-window. The drawing for this must not occupy more space than the third of one of our pages, and must be accompanied with explanatory remarks and motto as described above. This must reach us before April 1st. The prize and conditions will be the same as for the February essay.

We hope these arrangements will meet with everybody's approbation, and that some smart competitions will ensue.

AFTER a long delay, occasioned chiefly by the illness of Mr. J. C. Brough, who was elected editor, the Year Book of Pharmacy has at last made its appearance. It is a handsomer work than we expected to find it, and though we cannot profess to go into a critical examination of it just now, as we only receive a copy on the eve of going to press, we can but congratulate Mr. Ince, to whom was entrusted the compilation of the work, on the very interesting and useful volume presented. It is a great credit to English pharmacy that a book of this character should be its annual representative. It contains all the papers read at the last meeting of the Conference, the reviews of the Century of Old Books, which were not read there, and abstracts of the most important pharmaceutical papers of the past year. All the chief publications of this class have been laid under contribution, and we notice with especial pleasure that the autobiography of Mr. Henry Deane, which we published in our November issue, is among the papers taken from the

CHEMIST AND DRUGGIST. The book is free to members of the Conference, who pay only 5s. per annum, but is 7s. 6d. to the rest of the world. It contains about 600 pages. We have little doubt but that in a short time it will enable the Conference to enrol among its members nearly all the chemists of Great Britain.

CHEMISTS AND DRUGGISTS not otherwise occupied on the evening of the 25th inst., may aid the Benevolent Fund, and spend a few merry hours by attending the Chemists' Ball at Willis's Rooms on that occasion. The members of the committee are determined that the ball shall this year be no less brilliant than on any former occasion, and we hope to see it more than usually successful. Tickets may be obtained from Mr. T. D. Watson, 46, Halton-road, Canonbury-square, London, N., or from any other member of the committee.

THE Chemists' and Druggists' Almanac and Diary has almost accomplished the difficult feat of pleasing everybody. Among several more press notices of the work with which we have been favoured, and which were not published last month, we may mention the one in the *Pharmaceutical Journal*. The editor remarks that it is "a great improvement on all former editions, and is more than ever an indispensable counter companion to the pharmacist." The price is 1s. 6d. bound handsomely in cloth, or 1s. in boards. The book may be obtained direct from us or from Messrs. Maw, Son, and Thompson or Mr. William Mather. Foreign agents are Evans, Mercer, and Co., Montreal; Felton, Grimwade, and Co., Melbourne; Edward Row and Co., Sydney; Kempthorne, Prosser, and Co., Dunedin; Redington, Hostetter, and Co., San Francisco.

WE note the retirement from active business engagements of Mr. John Churchill, the senior partner in the firm of Churchill and Sons, Medical Publishers. Mr. Churchill, addressing the Profession for which he has worked for the past fifty-five years remarks:—"My pathway of life has been a happy one, bringing me into daily correspondence with the *élite* of the Profession, and united with them in promoting the interests of science and literature, while the success of my many publications has both gratified and amply rewarded my exertions." The sons, Messrs. John and Augustus Churchill, will carry on the business in future.

THE Children's Hospital in Great Ormond-street is a favourite institution all over the land, for the objects of its charity, all little ones under ten, appeal to the sympathy of every class. It may be said to be a classic spot too, for the touching death of a little hero in this hospital is described in one of Dickens's later works. Of all the extraordinary little patients that have come under the care of the physicians there, however, perhaps Dr. Dickenson has now the most remarkable. This little fellow, just turned three years of age, is a sufferer from a peculiar kind of paralysis, and his disease has probably been occasioned—not by lead in the tube of his feeding-bottle—but by indulging in the habit of smoking. The young gentleman is quite an adept in the art, preferring, we are told, "shag" to the milder forms of the weed. He objected to female society as soon as he could run about, preferring to toddle by the side of his father, who is a gamekeeper, and partaking of his enjoyments. His acquirements were tested in the hospital, and Dr. Dickenson reported to the Pathological Society that the proficiency which he exhibited with his pipe could only have been obtained by practice.

DR. HENRY E. ARMSTRONG, F.C.S., has been appointed Professor of Chemistry at the London Institution, an office once held by Mr. W. R. Grove, Q.C., F.R.S., and subsequently by Mr. J. Alfred Wanklyn. Dr. Armstrong commenced his laboratory studies under Professor Hofmann at the Royal College of Chemistry, and afterwards worked for nearly three years under Dr. Frankland, with whom he was associated in an important research on the "Determination of Organic Matter in Waters." He then visited Leipzig, where he spent upwards of two years in the Laboratory of Professor Kolbe, and obtained his degree of Doctor of Philosophy. On his return to England he commenced an investigation with the late Dr. Matthiessen, upon which he is still engaged. He also obtained an appointment as Chemical Tutor at St. Bartholomew's Hospital. Dr. Armstrong is now making the necessary arrangements for opening Classes for Practical Chemistry.

THE appointment of a new Postmaster-General will, it is hoped, result in the removal of the two or three annoyances which, with an apparent ingenuity of spite, the department now under Mr. Monsell's control lately inflicted on the commercial world. We are so much in the habit of praising the magnificent system whereby the work of the Post Office has been developed, and it has become so natural for us to be grateful for the boons already conferred by that institution, that we all tried to look pleasant when the last new batch of regulations came into operation last October. Some of them looked ugly, but we fondly fancied that they would prove to be for our good in the end, and we therefore bore cheerfully at first the restrictions introduced into the sample posts. But now, without a single apologetic voice, the whole country declaims against the withdrawal of a convenience which was only beginning to be appreciated. Its suspension has shown us all very clearly what an immense service the Post Office is destined to render the community in the cheap and prompt transmission of small parcels; and when we arrive at the end to which things seem to be tending, namely, that the Government will control the railways as well as the telegraphs, we shall have a system of centralization conferring advantages, the extent of which we can hardly conceive at present. It would not be wise to hurry on this consummation. But Mr. Monsell will doubtless wish to signalize his accession to office, and to prove his fitness for the post to which he has been appointed, by some act which shall commend him to the public. He could not wish for a better opportunity than that which is ready for him, namely, to restore to us the benefits of the sample post, and on a broader and more liberal basis than heretofore.

A QUARTERLY contemporary of the Homœopathic persuasion is asked to explain what it means when it designates certain practices as savouring of "quackery." Having regard to the free-and-easy manner in which this taunt is thrown at the heads of opponents generally, it seems to us about time that some definite understanding of the extent of its wickedness should be arrived at. Our contemporary explains very concisely "that it is meant to mean the use in a liberal art, such as Medicine is, of the practices of trade." The writer proceeds to remark that "it is generally agreed that in Medicine certain practices are 'unprofessional.' Of one class are those which violate the necessity of due qualification—such as practising without a licence, or using a title not legitimately obtained. Of a second class are all means of pushing oneself forward other than the exhibition of knowledge and skill. Hence we may not advertise our-

selves, or obtain puffing paragraphs in newspapers. There are many shades of such unprofessional conduct. As they grow darker, we want a more positive term to characterize them. And so, perceiving how they assimilate their practisers to the nostrum-vendor of the fairs and markets, we call such persons by his name of "quack." We ridicule him by it; but we stigmatize them, because their pretensions are of a higher order. And we use the opprobrious term in its fullest meaning, when any professor of the art of healing copies Dulcamara's ugliest feature, and keeps his remedies secret. His motive may be different; he may really believe in the virtues of his panaceas; but his conduct is the same. Though he be not a charlatan, his practice is charlatanism. And the consensus of the whole profession, and the instinct of all who have looked at the subject, is that any one who makes a secret of the remedial means he uses is guilty of quackery."

We quote these remarks in full partly because, to a limit, they are excellent in themselves, but also partly because they exhibit once more the unfortunate tendency which we have often criticised of regarding the profession as "a peculiar people." By all means let the doctors work up to as high a standard of morality as possible. We have nothing but praise to give them for their efforts to elevate themselves in this direction. But we do object to the insulting assumption that they are not as other men; that a code of morals suited well enough for tradesmen is not sufficiently pure for them; and that men who follow any track except that beaten by this narrow and self-constituted hierarchy are to be at once stigmatized as unprofessional and worse. These gentlemen who have such conscientious horrors of one form of advertising, always adopt others, no better, no worse; but they need not take such infinite pains to keep the outside of their professional platter so clean, while they continue to fight so fiercely for every tittle of their pecuniary right, and cannot even quite keep their hands off the poor druggist's slender profits. They sadly want to eat their cake and have it also.

DR. H. F. HELMBOLD, of New York, has introduced into the United States a medicine which he describes as Extract of Buchu, and which, it was stated in an article in this journal in October last, brought him in a clear annual revenue of forty thousand pounds sterling. Our contributor also added, "His style of advertising is essentially bold and original." Here is a specimen cut from the *New York Star*:—

"The renowned Dr. Helmbold last night paid a felicitous compliment to the agency through which his wonderful medicines have been heralded to the world, by giving a dinner to the Press. The dinner was worthy of the man who can afford the luxury of a six-in-hand team, and who has palatial residences at all the watering places, and a winter palace in New York City. The invincible doctor was then and there put in the field as the candidate of the press for the Presidency, and it was stoutly maintained that a man who had the brains to make a fortune by the use of printers' ink was the man of all others for them to sustain. It was all very well to talk about generals and statesmen, but give them the man who can invigorate a whole nation by his bracing medicines. After brilliant speeches, the company adjourned, with three cheers for Dr. Helmbold, and with the hope that the strength of his wonderful Buchu may never grow less."

THE sensation paragraph-mongers really show but very little originality of idea. If they get hold of a notion which once takes with the public, they never seem to imagine that

said public may be dosed with their idea *ad nauseam*. Of all things that have been done to death in this manner, lead-poisoning has become one of the most wearisome. Unmistakable symptoms of this complaint, it seems, may result from the indulgence in any kind of liquid whatever—waters, whisky, cider, beer, milk, or ginger-beer. Professor Brown detects lead in this most unlikely quarter, Professor Jones finds alarming traces of it somewhere else, and the learned Professor Robinson will probably, before long, discover a lot of it in the inside of an egg. It appears to be an ordinary constituent of snuff, and confectioners are constantly in the habit of employing it whenever they are not engaged in making arsenic *bon-bons*. We do not profess to have estimated the list of all the alleged sources of lead-poisoning, but we humbly ask analytical chemists to drop this worn-out subject and turn to some more lively discoveries. We firmly believe in the dangerous nature of lead when it is found in the stomach, having arrived by a short cut from the muzzle of a needle-gun or Minié rifle; and we are not prepared to dispute the allegations of its unwholesomeness as an article of food or luxury. But if our scientific information is correct, we must have swallowed such a quantity of it that we are really not much afraid of it. The latest lead-poisoning sensation, for which certain Liverpool chemists are responsible, reveals the horrible fact that we are now training our babies to the use of this addition to their nutriment, by feeding them through tubes composed of "india-rubber dissolved in 10 per cent. of bisulphide of carbon and thickened with white lead, resin, and sometimes oxysulphuret of antimony, from which, when it comes into contact with the milk, sulphuretted hydrogen is evolved and lactate of lead formed in the stomach." The fact that several millions of infants have not only survived this treatment, but have to all appearances thrived on it, somewhat diminishes the horror which we ought to experience on learning this report. But we remember, and now for the first time intelligently comprehend, the touching American epitaph in a graveyard a very long way out West:

"Grim death has taken darling little Jerry,
The son of Joseph and Syrena Howels,
Seven days he wrestled with the dysentery
And then he perished with his little bowels.
Most likely it was weaning injured little Jerry,
His bottle seemed to hurt his stomach's tone;
But with the angels he'll get plump and merry,
For there's no nursing bottles where he's gone."

THE PHARMACEUTICAL SOCIETY.

EVENING MEETING, JANUARY 4th.

IN commencing our twelfth volume we give this special prominence to our report of the last evening meeting of the Pharmaceutical Society, because we hope that by so doing we may aid in promoting a revival of interest in things pharmaceutical in the metropolis. That the present condition of those things is not satisfactory, ought to be evident to every London chemist; but is not so, simply because London chemists will not go to see for themselves. Unfortunately, we have nobody in particular to blame, and general censure is seldom of much avail. But as a matter of business interest and intellectual enjoyment, if not of public duty, we should have expected the London chemists to make a somewhat better show than the monthly evening meetings generally present. The Society has advantages superior to those belonging to any institution of a similar character in the world, and yet in the interest taken in its discussions, and in the energy with which it is supported, it is not relatively, but positively, inferior to almost any of its

contemporary provincial associations. The chemists' meetings, at Liverpool and Manchester (we cannot speak from experience of the other towns) are better attended, more practical, more spirited, and we believe more profitable to the attendants than those held in Bloomsbury-square. Not for lack of material here, let it be understood, nor on account of apathy on the part of the leaders. For instance, on the occasion to which we now especially refer, a communication on Australian Opium was read by Mr. J. S. Ward. It was rather meagre in its details, but gave sufficient information to whet the appetite for more. From the author's analysis of some opium sent over here, which had been grown in Australia, the percentage of morphia seems to have been exceedingly good—over 9 per cent. The price at present is high, namely, 52s. a pound, but if first-class opium can be grown in lands of such extent as the Australian colonies, an immense advantage will be the result both for them and for us. In the discussion which ensued, gentlemen of such world-wide repute as Daniel Hanbury and Professor Bentley took part, and it is such opportunities as this that we refer to when we speak of the advantages possessed by the Pharmaceutical Society over all the provincial associations. And yet, instead of seeing the room crowded with the proprietors of all the flourishing pharmacies in London, who, as one would suppose, would have looked on these monthly meetings as opportunities for spending pleasant and profitable evenings, there were, besides the gentlemen we have mentioned, one member of the council (in the chair), the professor of chemistry and a few others, who are part of the staff of the Society, one of the examiners, two or three proprietors of businesses, and perhaps a couple of dozens of students and nobodies. This, we say again, is not creditable to the metropolis. But to proceed with our report, which for the sake of convenience we have commenced at the last part of the business transacted. Mr. Hanbury incidentally remarked that in collecting opium, while the incisions in the poppy capsules are usually made vertically in India, the wounds are made in a latitudinal direction in Turkey. The specimen of Australian opium exhibited had become quite hard, and it was generally agreed that more information and samples must be awaited before a judgment could be passed upon it.

The time of the meeting, previous to the paper and discussion on Australian, was chiefly occupied by a long discussion on the pharmaceutical manners and customs of the United States, arising out of the lecture delivered at the December meeting by Mr. Robert Howden. The most interesting feature of this discussion was presented by some additional facts narrated by Mr. Howden. The fact that paper money is the universal currency of the United States, even for the very smallest article, was mentioned. Professor Parrish, of Philadelphia, had called Mr. Howden's attention to two pharmaceutical preparations very popular in the States, and which he thought might be advantageously introduced into English pharmacy. One was a syrup of the Wild Cherry Bark (*Prunus Virginiana*), which he highly esteemed for its pectoral and tonic virtues. A minute proportion of hydrocyanic acid was of course present in this preparation. The other was a syrup of Ipecacuanha which he (Professor Parrish) regarded as the best medium for the administration of this drug. It is prepared by first making a spirituous tincture (? proof spirit) treating the residue, which is not evaporated to dryness, with a little acetic acid, adding water, boiling and dissolving in the strained liquid a sufficiency of sugar. Reference was made to the practice of American physicians of sending phthisical patients to the beautifully-named city of Minneapolis. Minneapolis is a

town of the State of Minnesota, one of the most northern States of the Union. In the winter the thermometer often indicates 45° below zero, the mercury freezing in the bulb. Dr. Hall, of New York, the editor of *Hall's Journal of Health*, discoursing on health resorts in the December number of his magazine, remarks that the Minnesota climate is certain death to consumptive persons who spend a single winter there. He recommends as the best place for consumptive patients to go to, New Providence Island in the West Indies. In Nassau (its chief town) he says the coldest day during twenty years was 64° and the warmest during the same period reached 82°. Sometimes during March and April, there are not half a dozen rains, and these do not last more than two or three hours each, so that visitors can spend almost all the time during daylight in the open air; and for consumptives, out-door air for the greater part of twenty-four hours is essential to any radical improvement.

In the course of his remarks Mr. Howden suggested that the Pharmaceutical Society would confer a great boon on chemists dwelling in hot and cold climates if a series of tables were prepared and issued authoritatively giving the specific gravities of the more important articles of the *Materia Medica* at various temperatures ranging from 32° to 100°; it being often inconvenient, and indeed impossible, to take the specific gravity at the prescribed temperature of 60°. This, as he afterwards explained, could only be accomplished by frequent experiments on each substance, because the capacity of the bottle altered also with the temperature, and no proportionate formula could meet that. Dr. Attfield added that another difficulty existed in the fact that whereas the expansion of all gases for equal increments or decrements of temperature was the same, the expansion of liquids varied with almost every substance, and hence the experiment would have to be performed with every separate liquid included in the table.

Alluding to some remarks of Mr. Howden's respecting the frequent habit of American physicians sending to chemists urine for analysis, the fee being paid by patients, Dr. Attfield remarked, that during the past four or five years he had had a very large number of applications from different pharmacists throughout the kingdom for short directions which would enable them to take the specific gravity of, and otherwise chemically test urine for medical men, so that it was evident there was demand in this country for such knowledge on the part of chemists. This had induced him to write a short article, which was published in the "Chemists' and Druggists' Almanac for 1870,"* giving simple directions for the purpose required.

A handsome photograph of the members of the American Pharmaceutical Association, including about 150 portraits, was exhibited, which had been presented by Mr. Ebert, of Chicago.

Mr. Hanbury, referring to some specimens of *Pakoe kidang*, from Java, on the table, said they were the stipes of a large species of fern, covered with peculiar golden-brown hairs that formed a very pretty object under the microscope. This hairy substance was extensively used in Java and the adjacent parts as a mechanical styptic, but he was not aware that the plant possessed any active medicinal properties.

It was announced that the next meeting would take place in February, and on that and the following occasion Dr. Carpenter would lecture on "The Microscope."

* We may mention that only a few copies of this little book are now in print, price 1s. 6d. each. Besides the exceedingly valuable paper on "Testing Urine," by Dr. Attfield, the same volume contains articles by D. Hanbury, F.R.S., Joseph Ince, F.L.S., G. F. Schacht, and others. Also some very useful tables and commercial information.

Dr. Attfield also announced that he would on an early occasion read a paper on "Certain Precautions to be Observed in Making Wine of Iron." He should be glad to hear, in the meantime, from any one who had met with new difficulties in preparing this article. It was well known that during the last year or two malt liquors had had a very small quantity of solution of bisulphite of lime added to them, which had proved serviceable in preventing alteration, and it would seem that the process had been extended to wine, especially the cheaper kinds of sherry. The consequence was, that when this was used for making wine of iron, a reduction of the sulphite took place, sulphuretted hydrogen was generated, and the sample was spoiled.

PRESCRIPTIONS FOR PROVINCIAL ASSOCIATIONS.

THE Council, acting in concert with the London Board of Examiners, have formally and personally sanctioned this mode of instruction, and we venture at the opening of a new year once more to draw attention to a branch of direct, practical teaching hitherto neglected. The collection intended at present for home use is finished, except certain blank pages reserved for Paris, waiting, always though with faint heart, the advent of the reign of peace. The object now contemplated (the execution of which for two months has been interrupted) is to provide fifteen volumes of autograph formulæ for the country. Three have been despatched, yet about 800 recipes are still required to complete the remaining twelve. We may state that no pains are spared to render each folio useful and acceptable: the prescriptions are not hastily put together, and the production of the utmost variety is attempted. England, America, France, Germany, Norway, Switzerland, Canada, and Chicago form members of this happy family. Students cannot read that which they have never seen, and it is unjust to require them to decipher the instructions of the medical profession without affording them the smallest chance of experience. This we hold to be the lowest view of the matter; the scheme is the continuation and immediate outcome of Paris's Pharmacologia. These recipes, rightly employed, will sweep away superficial knowledge, and will lead the young pharmacist to an actual contemplation of various preparations in a manner which no books of theory can supplant. Let theory go hand in hand with practice, and two things will happen. First, our examinations will lose their last shade of terror; and, secondly, our ranks will be recruited with a race not only of scholars, but of admirable business men. We ask our readers to lend their active influence, in order that this collection of prescriptions may be finally arranged. A few offered by each would be of material service, and thus a door of improvement will be opened wide which has remained painfully too long closed.

THE POISON REGULATIONS.

LIKE prizefighters, immediately after shaking hands, with new year congratulations, we proceed to blows. It is to be hoped that in fighting out this question of the poison regulations this year, we shall all of us keep our tempers, and that whichever party is fairly beaten by a majority at the meeting next May, will surrender with good grace, and "come up smiling" to the consideration of whatever may be the next subject on the *tapis*. We would also express a hope that the discussion on this subject will be as far as possible completed before the annual meeting, and not renewed *ab initio* thereat. It will do no possible good to

go over well-trodden ground again in the way they generally do at the Pharmaceutical annual meetings—that is to say, like horses in a circus. It will be a great deal more sensible for us to make up our minds before we go, and then vote calmly, and not excited and hungry, as we were last year, to scream out our opinions, to scramble about for a division, to confuse amendments with original motions, and finally to leave with a grumble that our wild heads had not been correctly counted.

We doubt whether the subject is worth so much agitation as this. But at the same time, looked at from either side, the question is an important one. We shall not recapitulate the proposals of last year, but merely remind our readers that, after the discussion at the annual meeting in May last, it was understood that the subject should be adjourned for a year for better consideration, and should be once more brought forward at the annual meeting of 1871. In the interval, the Council appointed a committee to revise the proposals, and a set of suggested regulations for the storage of poisons (which we print in full elsewhere), to be observed by all chemists and druggists, has now been drawn up by this committee, approved of by the Council, and submitted to the trade. They are very simple; the main object, or we should rather say the sole object, being to satisfy the Government and the public that chemists and druggists, to whom has been entrusted the monopoly of the trade in poisons, do universally adopt some plan to avoid as far as possible the risk of fatal accidents. Whether these suggested regulations are the best that can possibly be devised is not the question at issue. The Council can hardly obtain a hearing for their proposals, so violently is the shout re-echoed from every corner of the land that free and enlightened British druggists will submit to no enforced regulations whatever. The advocates of some such measure as this argue—first, that it is a tacit agreement with the legislature that, in return for the advantages bestowed by the Pharmacy Act, some such regulations should be accepted; secondly, that it is possible that the Privy Council, in the event of our not agreeing among ourselves, will insist on some precautions being taken which will probably prove much more irksome; thirdly, that by adopting a fixed code, we should give the public and the medical profession some substantial reason for an increased confidence in our dispensing arrangements; and fourthly, and in chief, we might possibly, by this means, sometimes avert the sad consequences which we know have occurred from faulty arrangements for the storage of poisons. On the other hand, opponents of the measure resist it, first and foremost, because they conceive it to be an unwarrantable intrusion on the individual right of every tradesman to manage his business as he thinks fit; secondly, because regulations such as these, or others still more stringent, are already adopted voluntarily in many pharmacies; thirdly, because the precautions which it would be possible to enforce would be so slight as to be practically worthless; and, fourthly, because the Pharmaceutical Society would have no power to compel the observation of the same regulations by doctors and veterinary surgeons.

To state the case thus—and we have endeavoured to state it fairly—seems to us sufficient to prove the weakness of the opposition. The sentiment on which the resistance is based, which is a conception that the Council is arrogating to itself tyrannical powers, is simply an error. The Council suggests these regulations, and asks the trade—shall they be enacted or not? Granting that, neither the second, third, nor fourth objection which we have mentioned is logical; that the best druggists already adopt some such plan, surely argues its wisdom; whether the risk of accidental poisoning by the druggists would be diminished *at all* is the point, not

whether it would be removed altogether; and the final argument, that doctors would not be subject to these regulations, is unanswerable, purely for the reason that it is quite beside the question. If they did not adopt them, so much the worse for them, and for their patients, and so much the better, commercially, for chemists and druggists. The arguments we have just encountered have actually been brought forward, and we believe are about all the reasons that have been given by the opponents of the scheme. Somewhere in the provinces an absurd notion has arisen that the enactment of the regulations would involve occasional examinations of the dispensary by a policeman—an idea which presupposes the lunacy of everybody concerned. It appears to us that if the trade could be induced to accept some simple arrangement like this, there need be no inconvenience nor annoyance whatever, but on the contrary, that solid advantages would be gained, and possibly sometimes an accidental poisoning case avoided.

Some correspondents have expressed surprise that in this matter we should have advocated the same views as those enunciated by the majority of the council, believing from our antecedents that our place is most properly in opposition. We can assure our esteemed friends that we feel our position acutely, but we cannot help ourselves. We always try to be on the right side, and in the shifting of parties it will occasionally happen that quondam opponents are with us, and we find ourselves opposed by those who once fought by our side. But there is one point in the action of the Council on this subject which we must strongly condemn. We read in the report of the minutes that when the Council had resolved to accept the committee's suggestions, Mr. Woolley proposed, and Mr. Brown seconded, a motion to the effect that every registered chemist and druggist should be asked by post to say aye or no to the proposal. For this motion Messrs. Brown and Woolley only voted. Surely the Council had for the moment forgotten its present constitution. It represents the entire trade, and in this matter the entire trade is as much interested as any particular section. We hope that Mr. Woolley will bring this proposition again before the Council, and if it be again rejected, we hope to be enlightened by some one as to the grounds whereon such a peculiarly old-fashioned decision is arrived at.

THE PRACTICE OF WATER ANALYSIS.

BY SIDNEY W. RICH.

IN the last few years the analytical processes employed for arriving at a judgment of the quality of a sample of water intended for domestic purposes have been considerably modified, and chemists exhibit a great variance in opinion as to the value of the indications they afford. In this paper we do not profess to give even a *résumé* of the processes, neither do we propose to give prominence to the opinion of any one or other of the several eminent chemists who have essayed to resolve the question. All we offer our readers is an account of the method which we adopt in the practice of water-analysis, after a careful consideration of the information necessary to arrive at a sound judgment, and the means at our command for obtaining the same.

In order to say that a sample of water is a good water for domestic purposes, we must ascertain, in the first place, that it is free from deleterious organic matter or mineral substances likely to be injurious from the quantity or quality present; in the second place, that it is an economical water from a "soap-consuming" point of view.

It is impossible to determine absolutely the absence of deleterious organic matter, as the germs of disease are, for the most part, beyond the reach of physical investigation at present. As, however, these germs generally owe their

origin to, and are co-existent with, an appreciable amount of organic matter of one kind or another, the absence of such organic matter, or its presence in minute quantity only, may fairly be construed into presumptive evidence of the purity of the water. Again, although it is easy to determine the exact amount of mineral substances held in solution by a given sample of water, we are unable to say whether fifty grains, more or less, of such substances, per gallon, will exercise an injurious effect, or the reverse, on the system; possibly, unless the quantity greatly exceeds ordinary limits, no effect whatever is produced. The quality of the mineral matter is injurious when a poisonous metal is present. In respect to economy, we can be more absolute, as this question depends on the soap-destroying power of the water, which may be determined accurately by experiment.

The loss of weight incurred by a water-residue on ignition was at one time considered to indicate the amount of organic matter present in the water; this method, being absurdly inaccurate, has been consigned to the past. Again, the permanganate of potassium, decolorized by a sample of water, was held to indicate the quantity of organic matter present, but this has proved to be only a rough and ready test; if the water be very bad, this test will indicate the fact. As the first of these indications is quite useless, and the second almost so, we shall make no further allusion to them.

The presence of organic matter in water may be determined by means of direct or indirect evidence. Both are to be employed. Direct evidence of the presence of nitrogenous organic matter is obtained by effecting the evolution, under prescribed conditions, of ammonia.* Indirect evidence that the water has been at one time, or is still, contaminated by sewage, may be afforded by the presence of large quantities of nitrates, nitrites, or chlorides.† To determine the sewage-contamination of water, we adopt a method which involves the quantitative estimation of chlorine, of nitrogen contained in nitrates and nitrites, and of nitrogen contained in ammoniacal salts and organic matter.

The amount of mineral substances contained in water is determined by weighing the residue obtained by evaporating a given volume of the water. The presence of a poisonous metal is ascertained by the application of a characteristic test.

The "soap-destroying" power of water is determined by estimating the amount of a standard solution of soap required to produce a lather with a given quantity of the water—in other words, by an estimation of "hardness."

In order, therefore, to acquire the data for pronouncing an opinion on the quality of a sample of water, we have to ascertain the results afforded by the following analytical operations:—

1. A quantitative estimation of nitrogen in the form of ammoniacal salts and organic matter.
2. A quantitative estimation of nitrogen in the form of nitrates and nitrites, and a special test to indicate the presence of the latter.
3. A quantitative estimation of chlorine.
4. A quantitative estimation of the mineral residue.
5. A characteristic test for metallic poisons.
6. A quantitative estimation of "hardness."

1. *Method adopted for the quantitative estimation of the amount of nitrogen contained, in the form of ammoniacal salts and organic matter, in a given sample of water.* The process is based on the quantitative estimation of the amount of ammonia eliminated by the water under several given conditions.

The ammonia is measured by means of a colour test, the re-agent employed being known under the name of "Nessler re-agent." This re-agent is prepared by saturating an aqueous solution of one part of potassium iodide

* Direct evidence of the presence of organic matter may also be obtained by estimating its ultimate constituents. Carbon, hydrogen, and nitrogen; the process involved, however, is elaborate, and for its successful execution, requires skill and expensive apparatus.

† An abnormal amount of chlorides is almost certainly due to sewage contamination; nitrates may be derived from the strata through which the water has passed, but, probably, owe their origin to the oxidation of nitrogenous organic matter contained in the water; nitrites are due to the deoxidizing action exerted by organic matter on nitrates.

with biniodide of mercury, and adding three parts of sodic or four of potassic hydrate. This re-agent produces a yellowish coloration when added to water containing a trace of ammonia; and if the shade of colour produced be compared with that given by water containing a known amount of ammonia, the quantity contained in the sample may be ascertained. A standard solution of ammonia is therefore required, and this is prepared by dissolving 0.03882 grammes of sulphate of ammonium in a litre of water.

In estimating ammonia, glass cylinders are employed, about one inch in diameter and six inches in depth. To the water, occupying two-thirds the capacity of the cylinder, one and a-half cubic centimetres of Nessler re-agent are added. If the ammonia is present in a sufficiently small quantity a yellowish coloration is produced of greater or less intensity, and no precipitate; it is necessary that this be so. Trials are now made with several proportions of the standard solution of ammonia diluted with distilled water free from ammonia, so as to occupy two-thirds the capacity of another similar cylinder, and treated with Nessler re-agent. The quantity of ammonia necessary to produce a similar tint is the same as that contained in the water under examination. Each cubic centimetre of the standard solution of ammonia thus employed corresponds to one-hundredth of a milligramme of ammonia.

In the description above given of the method employed in measuring ammonia we have supposed the water under examination to be pure water containing a trace of ammonia. In the practical examination of a sample of water the ammonia existing as ammoniacal salts and nitrogenous organic matter is obtained in this form by careful distillation with carbonate of sodium, and subsequently with a solution containing caustic potash and permanganate of potassium. In distilling with carbonate of sodium the ammonia of the ammoniacal salts and a part of the ammonia of the organic matter is eliminated, and may be measured in the distillate in the manner described above. In distilling with the solution containing permanganate of potassium the remainder of the organic ammonia is eliminated, and may be measured. In practice half a litre of the water under examination is distilled with about fifteen cubic centimetres of a saturate aqueous solution of sodium carbonate. When the distillate begins to come over quite free from ammonia the second part of the operation is executed by distilling the residual water with fifty cubic centimetres of an aqueous solution, containing 8 grammes of potassium permanganate and 200 grammes of solid caustic potash per litre. In both cases the distillate is collected in the cylinders and immediately tested with Nessler re-agent and standard ammoniac solution. By these operations a commercial expression of the amount of ammonia liberated by the two distillations is obtained if in each instance the several quantities obtained in the separate distillates be added together. It is generally necessary to collect in the cylinders two, three, or more quantities of distillate both in the distillation with carbonate of sodium, and that with potassium permanganate, in order to be certain that the process of distillation has been continued long enough in either instance. The figures obtained represent hundredths of a milligramme per half litre, and being doubled represent the number of parts in a million parts of water.

The ammonia obtained by distillation with carbonate of sodium is derived from ammoniacal salts and urea existing in the water. It is sometimes worth while to furnish a separate expression of the quantity of ammonia derived from ammoniacal salts alone. This could be easily done by the application of the Nessler measurement test to the water were it not a fact that in nearly all natural waters the other matters present, such as precipitable mineral matter, interfere with the application of the test.

Wanklyn and Chapman, who originated the process described in this section, clude the difficulty as follows:—Take 500 c.c. of water, add a few drops of solution of chloride of calcium, then a slight excess of potash. Filter. Put it into a retort, and distil until the distillate comes over free from ammonia; then make up the contents of the retort with distilled water to their original volume—viz., 500 c.c. Now take 200 c.c. of the original water; treat it with chloride of calcium and potash as before. Then filter, care being taken to have the filter-paper well washed before

commencing the filtration. In this way two samples of water are obtained, the one with the ammonia as in the original water, and the other without the ammonia, but in every other respect the same as the former. This second portion of water is to be used in the place of distilled water to make the Nessler comparisons. As both samples contain the same impurities, they will affect the tint of the Nessler test in the same manner.

The ammonia eliminated by distillation with carbonate of sodium is generally designated "free ammonia," although a portion of it may be derived from urea; the ammonia eliminated by distillation with alkaline permanganate is designated "albuminoid ammonia." According to experiments made by Messrs. Wanklyn and Chapman, the water supplied to London by the different Thames Companies contained quantities of "free ammonia," varying between 0.01 parts and 0.03 parts per 1,000,000; and albuminoid ammonia varying between 0.06 and 0.16 parts per 1,000,000.

2. *Method adopted for the Estimation of Nitrates and Nitrites.*—The total quantity of nitrogen existing in a water under the form of nitrates and nitrites may be estimated by conversion into ammonia, and measuring the latter by means of the colour test described in the preceding paragraph. We quote the following details from Messrs. Wanklyn and Chapman's work:—

"One hundred c.c. of the water are introduced into a non-tubulated retort, and 50 to 70 c.c. of a solution of caustic soda added. The caustic soda must be free from nitrates, and the strength of the solution should be such that 1 litre contains 100 grammes of caustic soda. The contents of the retort are to be distilled until they do not exceed 100 c.c., and until no more ammonia comes over—that is, until the Nessler test is incapable of detecting ammonia in the distillate. The retort is now cooled, and a piece of aluminium introduced into it (foil will answer very well with dilute solutions, but we much prefer the sheet aluminium in all cases). The neck of the retort is now inclined a little upwards, and its mouth closed with a cork, through which passes the narrow end of a small tube filled with broken up tobacco-pipe, wet either with water, or better, with very dilute hydrochloric acid free from ammonia. This tube need not be more than an inch and a half long, nor larger than a goose-quill. It is connected with a second tube containing pumice-stone moistened with strong sulphuric acid. This last tube serves to prevent any ammonia from the air entering the apparatus, which is allowed to stand in this way for a few hours, or overnight. The contents of the pipeclay tube are now washed into the retort with a little distilled water, and the retort adapted to a condenser, the other end of which dips beneath the surface of a little distilled water free from ammonia (about 70 to 80 c.c.). The contents of the retort are now distilled to about half their original volume, the distillate is made up to 150 c.c., 50 c.c. of this are taken out, and the Nessler test added to them. If the colour so produced is not too strong, the estimation may be made at once. If it is, the remainder of the distillate must be diluted with the requisite quantity of water."

The result furnished by the above estimation must be calculated into parts per 1,000,000, and the result compared with that derived from water of known quality, such as filtered Thames water. A water cannot be condemned for containing an exceptional amount of nitrates, unless the quantity of "albuminoid ammonia" is also somewhat suspicious.

The following is a qualitative test for the indication of nitrites:—Add a small quantity of starch emulsion and a drop of solution of potassium iodide to a pint of the water, and subsequently a few drops of sulphuric acid; if the blue colour produced is sufficient to render the water nearly opaque, the quantity of nitrites thereby indicated is sufficient to condemn the water, unless it be exceptionally free from "albuminoid ammonia."

3. *On the Quantitative Estimation of Chlorine.*—Chlorine may be estimated by the usual volumetric method with nitrate of silver and potassic chromate. Water which has been contaminated by sewage must necessarily contain an abnormal amount of chlorides; thus the Thames at Kew contains about 12 of chlorine in 1,000,000, whilst at London Bridge it contains as much as 64. The presence of an

abnormal amount of chlorides does not, however, invariably indicate sewage contamination, as they may be dissolved by the water in passing through particular strata.

4. *On the Quantitative Estimation of the Mineral Residue.*—The total solid residue yielded by a given sample of water is estimated by evaporating a known volume, say half a litre, of the water in a platinum dish over a steam-bath, and subsequently drying in an air bath at a temperature of 100° C., and weighing. The evaporation should be conducted in a room in which there is as little as possible of dust flying about, and the conditions under which the platinum dish is weighed empty should be as nearly as possible the same as those under which it is weighed when it contains the water-residue. Water supplied to London contains on the average about 300 parts of solid residue in 1,000,000.

5. *On the Detection of Metallic Poisons.*—As a rule, it is sufficient to examine a water for lead and perhaps copper. This may be readily done by slightly acidulating about a pint of the water with hydrochloric acid and passing a little hydrosulphuric acid gas through. If it be then allowed to stand over night, the mouth of the vessel being closed with paper or cotton wool, a deposit of sulphur will be observed in the morning, white if the water be free from lead and copper, more or less black if these metals be present. When the water under examination comes from a mining district it is also as well to test for arsenic and zinc; space will not allow us to enter into details respecting the tests for these metals, but we may point out that in order to obtain them in a sufficiently concentrated form it is necessary to evaporate a large bulk of the water rendered alkaline with a little caustic potash or soda.

6. *On the Estimation of "Hardness."*—Dr. Clark's process for estimating the degree of hardness of a water is so well known, and details respecting the method of operating are so universally met with in text-books that it would be superfluous to enlarge on the subject here. The method of preparing the standard soap solution from lead plaster and carbonate of potassium is preferable to that adopted by Dr. Clark; details respecting the former have been given by Mr. C. H. Wood in the *Pharmaceutical Journal*, vol. iv., second series.

PUBLIC HEALTH.

AMONGST the miscellaneous matter contained in the twelfth and last report of the Medical Department of the Privy Council, we observe that considerable prominence has been given to certain contagious diseases which were somewhat unusual in their character. It appears that during the autumn months of the year 1869, the attention of the Chief Medical Officer was attracted to the growing prevalence both of relapsing fever and scarlatina. The former had been generally unknown in England, until certain indications of the epidemic were observed for the first time amongst the mining population of Tredegar, in Monmouthshire, and still later on a few cases occurred in the metropolis. It was then thought necessary to draw the attention of the Poor-law Board and the Metropolitan Officer of Health to the occurrence, in order that proper precautions might be taken against the spread of the disease. These representations led to prompt and vigorous action, by which a decided check was given to the progress of the epidemic, better known by the name of "famine-fever."

The greatest predisposition was to be found amongst the poorest and most destitute classes; and in the absence of liberal supplies of nourishing food and restoratives, the persons who had been attacked not unfrequently fell victims to typhus. Under such circumstances it was essential that the sick should at once be removed from the healthy; and for this purpose ample hospital accommodation was an indispensable condition for limiting the extension of the disease. As a first step, the London Fever Hospital was enlarged by the erection of an iron building containing 64 beds; and the Asylums Board commenced on its own ground, at Hampstead, the construction of another fever hospital, with capacity for 90 patients. The admissions of relapsing fever into the London Fever Hospital in

October had numbered 130; in November they were 259; in December 315. After the Christmas the disease increased, and appears to have attained its chief extension in the early part of the year over the poorer parts of London. In the January of 1870 we find the cases admitted were 258; in February the London Fever Hospital, with the newly-opened Hampstead Hospital received 153 cases only; in March they received 140. Since that time the districts which have supplied most cases have continued to be Whitechapel, St. Giles's, and Camberwell. Although upon the wane the infection still exists amongst us in more than sufficient quantity, according to the opinion of the medical officer, to constitute a very formidable danger to public health if circumstances were such as to favour its spread. Meanwhile, it is satisfactory to note that although cases have occurred, and are still occurring, in other great towns of the United Kingdom, in these, generally speaking, the disease has not hitherto been at all abundant.

The very extensive and fatal prevalence of scarlatina at the same time calls for special comment. The mortality produced will probably not be known until the middle of the present year, when the Registrar-General can publish his compilations from the local registers of 1869. It seems probable, from what has already been ascertained in certain localities, that the epidemic has been, at least, equal in severity to what occurred in 1863-4, when scarlatina destroyed in England more than 60,000 persons. The existence of so great a mortality seemed a proper occasion for the department to circulate such advice as it was able to give to the public, on the precautions needful to be taken. These consisted chiefly in adopting every practicable means to ensure freshness of atmosphere, dryness of soil, entire absence from dirt, precautions against overcrowding, and the use of impure water. To avoid the spread of scarlatina it was necessary, if possible, to ensure the removal of the patient to an hospital, in all places to sprinkle chemical disinfectants about the apartments, and in cases of recovery to employ the copious action of warm baths with abundant soap. Under the Sanitary Act of 1866, the local authorities have been invested with considerable powers to prevent the spread of contagious disorders. They are enabled at the public expense to cause any infected house to be cleaned, and to provide a proper place with all necessary apparatus and attendance, for the disinfection of such articles of clothing or bedding. Also to provide hospitals, either temporary or permanent, and carriages for the conveyance to them of the sick, besides mortuary receptacles for the dead.

The Medical Officer observes that at the present time, with scientific knowledge limited as it is, and with our very imperfect administrative resources, any one who is responsible for advising in the requirements of the public health must feel extreme difficulty. The disease is one that not even the best medical skill can always, or nearly always cure. We possess no other known power of dealing preventively than such as consists of interrupting all contagious communications between the infected and non-infected parts of the population. This is only to be accomplished in proportion as the public are prepared to enforce a thoroughly strict system of isolation. That such rules would be very onerous cannot be denied, but at the same time it is not unreasonable to demand for human life some of the same sort of administrative efficiency as the money-interests of cattle keepers have received. For this purpose it would require to be made a legal obligation upon every health authority of the country to have sufficient, proper, and permanent hospital accommodation, and all disinfectant processes necessary for the protection of the public health, done under the direction of a skilled officer. Although any more radical resistance is not within the resources of medicine, hopes may be fairly entertained that in time such other resistance will become possible. Considering what Jenner's discovery, in relation to one such disease, has done for the whole human race, no more worthy scientific problem can be conceived, than the mitigation of the remaining unconquered contagion. Studies, more or less tending to that object, are now being followed by various foreign observers; and the Privy Council express their readiness to take such active share in the scientific work, as Parliament may, in its wisdom, be willing to sanction and encourage.

PHARMACAL NOTES.*

BY ALBERT E. EBERT.

ON several occasions we have been requested by physicians to prepare pills from the oil of yellow sandal wood, each containing from five to ten drops. This we have accomplished to the satisfaction of both prescriber and patient, by the following method:

Take of oil of Yellow Sandal Wood,
Yellow Wax, each, half a troy-ounce.

Melt the wax in a capsule, and weigh into it the oil of sandal wood; mix and stir until cold, then roll out the mass, and divide it into 80 pills, by means of the pill machine or pill-tilt, in the same manner as an ordinary mass, and sprinkle with marsh mallow root powder. Each pill contains three grains, or about five drops of the oil. The excipient is unobjectionable, as it is readily soluble in the juices of the stomach. In the same manner we have made pills of the oils of cubebs, black pepper, and fleabane.

Tincture of calabar bean is frequently prescribed, and there is considerable variation in its strength as dispensed by different Pharmacists. We have been accustomed to prepare the tincture, using one part of bean to ten of liquid, the menstruum consisting of alcohol, three parts, and water one part. The bean, previously reduced to a fine powder, is macerated for several days with the water, the alcohol is then added, and the whole is allowed to macerate eight days longer. Finally, the mixture is thrown upon a filter, and when the liquid has ceased to pass, pour upon the residue sufficiency of the alcoholic menstruum to make up the original measure. It is difficult, by means of the mortar and pestle, to reduce the whole of the calabar bean to the requisite degree of fineness; besides, by this means much waste of the valuable material must occur. To avoid these difficulties, we have resorted to the good wife's sanctum, and appropriated that piece of apparatus so indispensable to a cup of good coffee, namely, the coffee mill, which we have found to answer to a charm the purpose of reducing the calabar bean without incurring loss, and without waste of time. We can heartily recommend the purchase of such a mill for use in reducing small quantities of many hard drugs, as stramonium, and colchicum seed, etc.

Extract of calabar bean is quoted by certain manufacturers of pharmaceutical preparations at 1.25 dols. per ounce. Having had some demand for the article, we undertook to prepare the article, and, after thoroughly exhausting the bean, upon evaporation of the solution, were surprised to find the yield of extract to be but a trifle over one troy ounce from sixteen troy-ounces of the bean. We find that other manipulators have obtained even smaller results. The query naturally arises how can any manufacturer find it profitable to furnish the extract at 1.25 dols. per ounce, when it requires one pound of material, costing 4.00 dols. to obtain that quantity, to say nothing of the cost of menstruum, labour, etc.

The dose of the tincture, as usually prescribed, is fifteen drops; that would indicate the dose of the extract to be about one-twentieth of a grain.

Lard is an article constantly required in galenic pharmacy, and upon its purity and freedom from rancidity, depends, in great measure, the preparation of such ointments and cerates as will be creditable to the careful dispenser. Lard of the requisite quality is within the reach of all who will take the trouble to render it from the "leaf lard," which, in the proper season, is always obtainable. The difficulty in the way is the preservation of a sufficient supply from season to season, without its becoming rancid. Many suggestions have been made, by different writers, having in view the preservation of lard, by such means as the addition of gum resins, balsams, or solutions of the same, &c., but all are liable to some objection. The best and simplest method of accomplishing the desired end, that has come under our notice, is that followed in the Apothecaries' Hall, at Glasgow, Scotland, where the freshly prepared lard is filled into bladders, which are afterwards tied at their necks, and suspended in a cool cellar.

Savine Cerate.—This excellent irritant cerate is but little used at present; indeed, so seldom is it prescribed, that the

dispenser is apt to find to his dismay his stock on hand, injured by exposure and age. It is preferable, therefore, to prepare this cerate extemporaneously, when required, and this can be readily done by keeping for the purpose the oleo-resin of savine, prepared by exhausting the leaves with ether, and evaporating according to the U. S. P. formula for the cerate. By weighing the oleo-resin, and ascertaining the proportionate amount appropriate to each ounce of cerate, the two may be mixed whenever required.

Ointment of Iodide of Sulphur.—The directions of the Pharmacopœia "to reduce the iodide of sulphur to a fine powder, with a little of the lard," has not proved practicable in our hands, as by the process we have failed to reduce the iodide to the fine state of division essential to a good ointment. Several modifications have been proposed, as triturating with small quantities of alcohol, ether, chloroform, and bisulphide of carbon; but these substances have little solvent action on the iodide; the use of iodide of potassium has also been suggested, but this decomposes the iodide, and hence is objectionable. Oil of turpentine has been used, but we have found the best success attending the use of the oil of lavender as a solvent—a few drops being sufficient, and there can be no reasonable objection to this addition.

To secure dispatch in the mixing of extracts with ointments and cerates, we keep such extracts as belladonna, stramonium, opium, and arnica, in a fluid condition, by means of equal parts of water and glycerin. The diluted glycerin is added to its own weight of extract, and when the latter is prescribed in combination with a cerate, it of course is only necessary to substitute for the extract double its weight of the liquefied article.

It is of frequent occurrence that prescribers direct large quantities of watery or alcoholic solutions to be mixed with ointments or cerates. The best means of incorporating the greatest possible quantity is to melt the fatty matter and stir in the solution.

Tannic acid is seldom found in the market of such purity as to form a clear solution. To facilitate the dispensing of solutions of this acid, we are accustomed to keep on hand a clear standard solution, preserved by glycerin. It is prepared by dissolving the tannin in a small quantity of water, filtering the solution, adding a weight of glycerin equal to half that of tannic acid employed, and evaporating the fluid to such an extent that each part of tannin is represented by two parts by weight of the solution.

Suppositories.—When moulds of block tin are used, the main point necessary to secure success, is to have the moulds thoroughly chilled by ice before the addition of the melted material; when this is observed, there is no difficulty in removing the suppositories with ease, and within a few minutes.

Rose Water.—When this is prepared from the oil by rubbing with magnesia, and adding water, a certain loss of oil occurs (absorbed by the magnesia), and the resulting water will not give clear solutions with nitrate of silver, owing to the solution of a minute quantity of the carbonate of magnesia, or of saline matters contaminating the latter, or both. A better method, and which of course yields a pure product, is to drop the oil into boiling distilled water, and incorporate by agitation. Other medicated waters may be prepared in a similar manner.

CONTINENTAL CHEMISTS.

THE wide field embraced by the word Continental would seem, analytically, to imply much more than it actually does, for the simple reason that on the Continent a somewhat similar system permeates the whole pharmaceutical body, though we intend to point out the prominent features of difference between the various States, both from a legislative and social point of view, comparing the practice of pharmacy in its various aspects with that of England. Commencing with what will shortly be an era of the past, we will give a brief account of pharmacy in the Roman States, principally because they are visited by many English subjects in search of health and recreation, and also on account of the historical interest it may present to future pharmaceutical legislators, who, in a paternal system of government, might copy worse models. The legislation on the whole, is remarkably advantageous for those most

* From the Chicago Pharmacist.

interested in it. It is chiefly based on the requirements of the population, as is also the case in the kingdom of Italy. Only whilst in Italy 1,500 inhabitants are recognised as the *quantum suff.* to support a chemist, in the Roman States 3,000 are considered necessary to support adequately a pharmacist of ability. An exception to this rule is very rare, and is only accorded in cases where villages or clusters of inhabitants are too distant from the nearest pharmacy to obtain easy access, and even then an exceptional margin of profit is allowed them, as a regular tariff of all drugs and medicines is annually issued to all Roman pharmacists, as is also the case in the kingdom of Italy. Two classes of chemists are allowed to practise in the Roman States—the first class (*alla matricola*), and the second (*bassa matricola*)—who enjoy but very limited rights, and can only establish themselves in very small places, which a pharmacist of the first class would naturally despise, unless he should happen to succeed to the business of his father. They are also forbidden to manufacture chemicals or other pharmaceutical products, such as extracts or compound preparations.

In order to possess or to carry on a drug business it is necessary to obtain the pharmaceutical diploma, as well as the consent of the medical council; nevertheless, a business can be carried on by a non-pharmacist, provided that the manager possess the requisite qualifications. To obtain the authorisation to open a pharmacy, all the following formularies must be complied with—in fact, they represent briefly and substantially the pharmaceutical laws of Italy.

A chemist can only carry on one business. Should the proprietor die, the widow or family may carry on the business through the means of a manager possessing a diploma, binding them at the same time to declare the change to the medical council, and to the governing pharmaceutical body.

This same declaration is also required when a chemist either closes or sells his business. Unlike the French laws, a chemist may possess two or more places of business, but on the special condition that he place at the head of each one that he does not superintend himself, a manager possessing all the legal qualifications. This is a rather liberal institution, considering the hemming-in of most of the other advantages; but what is still more surprisingly liberal in a State—of all in Europe reputed the most disinclined to reform—is the permission accorded to anyone, be he priest or costermonger, to own a pharmacy, provided always that the manager be possessed of the required diplomas.

Pharmacists are allowed to sell to the public all and every drug or medicine, excepting a very few dangerous poisons, which they are not permitted to deliver without a regular prescription, which they keep, date, and paste in a book, after the manner of our American brethren.

A regulation, showing all the care and paternal solicitude of the Roman Government for the public weal, is that which forbids a chemist, under any pretext whatever, to absent himself from his shop, except he be provided with a special permit from the Council of Health. Another astonishing item is that there exists no Roman Pharmacopœia, and every chemist has to employ his own brains in the production of his tinctures; but of course, as might be expected, the Italian Pharmacopœia is the recognised official guide. The chemists, too, enjoy the exclusive monopoly of selling all medicines and drugs, and the wholesale druggists are not allowed to deliver small quantities of any substance likely to be purchased by a retail customer.

Another extraordinary regulation, and surprising to the last degree when we consider it as a part of the legislation of Rome, is the prohibition of selling drugs or medicines to religious corporations, convents, or hospitals that maintain a pharmacy of their own. This appears somewhat ambiguous, as the charitable friars or sisters, who usually give gratuitously to the numerous poor of Rome a large quantity of medicine, deserve every accommodation. We can only attribute this regulation to the jealousy and influence of the medical profession, who naturally view the charitable visits of the good sisters as an inroad on their preserves.

The poison laws appear almost as defective as in England, France, or Italy. Inspection of the drug-stores is compulsory, and is performed much in the same manner as elsewhere. It takes place every two years; the inspectors,

appointed by Government and the Medical Council, receive a fee from the druggists, and curiously enough are forbidden, under heavy penalties, to accept either meat or drink at the hands of those they visit. Special custom-house officers inspect all importations of drugs and chemicals. Now that the Roman Government is absorbed into that of Italy, naturally all these pharmaceutical privileges will disappear, and the more stringent regulations there in force will probably be a cause of regret to some few of the Roman patriots. On the whole, the pharmaceutical legislation of the Papal Kingdom may be considered as the most liberal and advantageous of any State in Europe; the restrictions few—the advantages tangible and numerous. Counter-prescribing is quite unknown, and here, as elsewhere in Europe, doctors prescribe and chemists dispense to the mutual benefit of all parties concerned. With the exception of a few handsome shops in Rome itself, the pharmacies are generally small, dark, and inconspicuous, which does not, however, seem to militate against their business, judging from the strings of patients often to be seen thronging the door. We will next cross the frontier, no longer subjected to the annoyance of a passport, and consider the position of our Italian *confrères*.

(To be continued.)

THE CAMPHOR TREE OF SUMATRA.

AMONG the most luxuriant and valuable trees of the island of Sumatra, the first belongs to the *Dryobalanops camphora*. The tree is straight, extraordinarily tall, and has a gigantic crown, which often overtops the other woody giants by one hundred feet or so. The stem is sometimes twenty feet thick. According to the natives, there are three kinds of camphor tree, which they name "mailenguan," "marbin tungan," and "marbin targan," from the outward colour of the bark, which is sometimes yellow, sometimes black, and often red. The bark is round and grooved, and is overgrown with moss. The leaves are of a dark green, oblong oval in shape, and pointed. The outward form of the fruit is very like that of the acorn, but it has five round petals. These are placed somewhat apart from each other, and the whole form much resembles a lily. The fruit is also impregnated with camphor, and is eaten by the natives when it is well ripened and fresh.

The amazing height of the tree hinders the regular gathering, but when the tree yields its fruit, which takes place in March, April, and May, the population go out to collect it, which they speedily effect, as, if the fruit be allowed to remain four days on the ground, it sends forth a root about the length of a finger, and becomes unfit to be eaten. Among other things, the fruit prepared with sugar furnishes a tasty confit or article of confectionery. It is said that it is very unhealthy to remain near the camphor tree during the flowering season, because of the extraordinary hot exhalations from it during that period. The greater the age of the tree the more camphor it contains. Usually the order of the rajah is given for a number of men, say thirty, to gather camphor in the bush belonging to territory which he claims.

The men appointed then seek for a place where many trees grow together; there they construct rude huts. The tree is cut down just above the roots, after which it is divided into small pieces, and these are afterward split, upon which the camphor, which is found in hollows and crevices in the body of the tree, and, above all, in the knots and swellings of branches from the trunk, becomes visible in the form of granules or grains. The quantity of camphor yielded by a single tree seldom amounts to more than half a pound, and if we take into account the great and long-continued labour requisite in gathering it, we have the natural reply to the question why it fetches so high a price. At the same time that the camphor is gathered—that is, during the cutting down of the tree—the oil which then drips from the cuttings is caught in considerable quantity. It is seldom brought to market, because, probably, the price, considering the trouble of carriage, is not sufficiently remunerative.

When the oil is offered for sale at Baros, the usual price is

one guilder for an ordinary quart wine-bottleful. The production of Baros camphor lessens yearly, and the profitable operations of former times—say in the year 1853, when fully 1,250 pounds were sent from Padang to Batavia—will never return. Since time out of mind the beautiful clumps and clusters of camphor trees have been destroyed in a ruthless manner. Young and old have been felled, and as no planting or means of renewal has taken place, but the growth of the trees has been left to nature, it is not improbable that this noble species will ere long wholly disappear from Sumatra.

GLYCERINE EXTRACTS OF PEPSIN AND OTHER FERMENTS.

THE following is published in *Nature* from the pen of Professor Michael Foster:—

"A short time ago Von Wittich published in *Pflüger's Archiv* some interesting results of an attempt to isolate, by means of concentrated glycerine, pepsin and other so-called ferments found in animal and vegetable bodies.

"The mucous membrane of a pig's stomach, washed and freed as much as possible from water, was finely minced and bruised, and then covered with pure glycerine. After standing twenty-four hours, a few drops of the glycerine, diluted with acidulated water, digested fibrin with remarkable rapidity. After pouring off the whole of the glycerine, a second, third, and even fourth glycerine extract could be made, all manifesting strong peptic powers. On treating, after filtration, these glycerine extracts with a large excess of alcohol, a slight precipitate was obtained, which, separated by filtration and re-dissolved in acidulated water, though giving only the faintest proteid reaction, was strongly peptic.

"In a similar manner salivary gland and pancreas gave up to glycerine an amylolytic or starch-converting ferment, almost entirely free from proteids, and a 'laden' pancreas also gave up a ferment capable of digesting fibrin in an alkaline medium. Barley (*not germinated*) gave up to glycerine a non-proteid diastase; and almonds a ferment capable of acting on amygdalin.

"I have repeated many of Von Wittich's experiments with almost entirely similar results. We certainly have in glycerine a new means of working out the intricate problems of these so-called ferments. The glycerine extracts, for the most part at least, seem to remain unchanged for a very long period, so that a stock of ferment can always be kept in store. On the other hand, tissues may, by repeated extraction with glycerine, be exhausted of their ferment, and yet little, if any, otherwise changed, so that they can be examined under conditions hitherto impossible.

"Not the least value of the new method lies on the practical side. The means hitherto adopted of preparing the so-called pepsin for medical purposes are confessedly clumsy and inefficient. By glycerine we can now extract, without any trouble whatever, a pure palatable peptic liquid, one which apparently will last any length of time. It is, moreover, to be depended on for its peptic powers; any one who has fairly tested by actual experiment the various 'pepsines' of commerce, will understand the value of this remark."

MEDICINE IN CHINA.

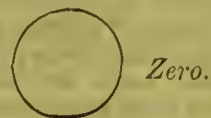
IN a magazine called the *Phoenix*, published in London for those interested in Asiatic research, and under the editorial care of the Rev. James Summers, the Professor of Chinese at King's College, we find some curious particulars of the theory of medicine prevalent in the Celestial Empire.

The Chinese commence their theory by maintaining, that man is a *Seaou-teen te*, a little heaven and earth;—a world in himself;—an universe in miniature;—a microcosm. With respect to the greater universe, viz., the system of nature, as it appears in celestial and terrestrial phenomena, the Chinese teach that there is an eternal and necessarily existing power, or principle of order, which they call *Tue-keih*, and which may be translated by an indefinite and

vague expression, such as—"the eternal," or "infinite principle."

This eternal principle, in their view, is merely the first link of the great material chain;—a being distinct from the universe, nor is it endued with any moral perfections.

They represent this first cause, this first link of the chain, by a circle, or



Zero.

But, as they find it difficult to account (from what they see in nature) for all the appearances which present themselves, on the supposition of a simple homogeneous body, acting on itself, they suppose that, when the present system of nature assumed the form it now possesses, the one eternal principle was divided, and became a Dual power, or two powers, called, in their language, *Yin* and *Yang*, and which is represented by a figure of a circle divided in two by a waving line across the centre, thus:



This figure is very commonly seen, as a sort of sacred ornament, on various occasions amongst the Chinese.

From all that can be ascertained of the original import of the words, *Yin* and *Yang*, it would seem that they are most nearly translated by calling *Yin* a *Vis Inertia*, and *Yang* a *Vis Mobile*.

Yin, the Chinese consider to be of the *feminine* gender, and attribute to it darkness, weakness; passive and inferior qualities.

Yang, they regard of the *masculine* gender, and attribute to it light, strength; active and superior qualities.

To one or other of these Dual powers, all existences in the universe (and, by the way, all numbers) belong.

On the regular action of these two powers reciprocally, the order and harmony of the universe, both naturally and morally, depends. Excess or defect in their power, introduces disorder and confusion into the system of nature and the affairs of mankind.

Thus far of the Dual Powers on the grand scale of universal existence; but every individual human body is a world in itself—a microcosm; and although, in nature generally, woman takes her place amongst the dark and weak—*Yin*—and man is classed with light and strength—*Yang*—yet in each animal body, whether male or female, the Dual Powers exist; and every part of the body is ascertained to belong either to *Yin* or *Yang*.

A due reciprocal action of these on each other, preserves the harmony of the system, which is health; excessive or defective action in either power causes disorder or disease; and high degrees of excess or defect cause death.

The object, therefore, of Chinese physic is to preserve in due strength and exercise the *Vis Inertia*, and the *Vis Mobile*: that the first may offer a competent resistance, and the latter may not destroy by acting with undue force. Or (according to the phraseology of the celebrated, but unfortunate and unhappy Brown), "that the fire of human life may not go out for want of fuel; nor the combustion be too vehement and too soon terminated by having an excessive supply."

Such is an outline, tolerably accurate, of the fundamental principles of Chinese philosophy and medicine, which system, they say, was taught in the antediluvian age, and has maintained its ground in this most singular country ever since.

This, then, leads to the consideration of the affinities of dead and living matter. As in the system of the universe Europeans believed that the planets were endued by their Maker with certain attractions; and as in minute particles of dead matter, there are affinities of adhesion, cohesion, and repulsion; so the Chinese maintain that in animated matter there exist certain affinities and repulsions in reference to all nutriment or medicine taken into the stomach: for example, Mercury will affect the liver, and, they say,

injure the generative powers. Opium affects the heart and functions.

With the Chinese, the existence of the Dual Powers, with these affinities and correspondences, is received as an axiom in all their theories of physics.

Natural bodies, or the elements of matter, are divided by them into five classes—"Metal, Water, Wood, Fire, Earth;" and these "five elements" produce and destroy each other in a perpetually revolving circle; thus "Metal produces water; water, wood; wood, fire; fire, earth; and earth, metal. And having thus gone round the circle, the same operation recommences, and goes round *ad infinitum*."

But in nature, destruction is going on as well as production—thus, *kin k'e mih*, Metal destroys wood; wood (or vegetation) destroys (or impoverishes) earth; earth destroys water; water, fire; and fire, metal.

And thus it is that the system of nature is perpetually going the round of production and destruction. No substance is annihilated; it is its form only which is destroyed; it rises again in some other; it is corrupted, only to be again generated. The disposition to generate or corrupt, to produce or destroy, reciprocally, is chiefly referred to in medicine.

The Viscera of an animal body, are divided into five classes, or, as Du Halde calls them, "noble parts"—the *kan*, *sin*, *p'i*, *fi*, *shin*, Liver, heart, spleen, lungs, and kidneys—the latter sometimes includes the pancreas and stomach.

The *Materia Medica* are all classed under one or other of the five elements; those that belong to wood, have an influence on the liver; calorie, on the heart; earth, on the spleen; metal on the lungs; and water, on the kidneys.

Again, tastes are divided into five, viz., sour, sweet, bitter, acrid, salt.

The five tastes have certain affinities to the five elements, and to the five viscera; the affinities are these:—

Sour, to wood and the liver; sweet, to earth and the spleen; bitter, to heat and the heart, acrid, to metal and the lungs; salt, to water and the kidneys.

The Chinese divide their colours into five; and refer red to heat, and to the heart.

The five colours are these: *Tsing*, *hwang*, *chih*, *pih*, *hih*, Green, yellow, red, white, and black; and the affinities are these:—

Green is related to wood, and affects the liver; red to heat, and affects the heart; Yellow to earth, and affects the spleen; white to metal, and affects the lungs; black to water, and affects the kidneys.

Thus the Chinese divide natural bodies—the viscera, tastes, and colours; and such is their belief of the affinities, attractions, and repulsions, or in one word, the correspondences in nature.

The system is possessed of a beautiful symmetry; but it wants (what is indispensable to all science) the basis of truth. How do they prove what they say?

Perhaps some of the ideas are not without support from analogy: how they correspond or disagree with theories, formed or promulgated in the western world, in ancient and modern times, must be left to professional men to determine.

VANILLA.*

THE Vanilla is the fruit of a plant growing in Mexico.

There are species of the genus *Vanilla* growing in equatorial America and Asia, but the species from which our Vanilla of commerce comes is the *Vanilla planifolia* of Mexico, and not the *Vanilla aromatica* or *Epidendrum Vanilla* of Brazil. The vanilla is an orchidaceous plant, and is almost the only article of use drawn from this large order. It is an order distinguished by its singularities; the bizarre forms of its flowers and unusual modes of growth. It includes many of the air plants, and such as grow by attachment to trees or rotten wood. The species abound in our hot-houses, and sometimes special buildings are appropriated to their cultivation.

The *Vanilla planifolia* is a climbing plant, and elings to tall trees and covers them with its rich foliage. In our hot-houses it is but a comparatively small plant. Its flowers are large, of a greenish yellow white, and when they dis-

appear a pod of several inches in length succeeds. The pod is round, and of a yellowish colour. The pods are collected a short time before they are ripe, and to prevent their opening they are smeared with oil, which enables them to retain their softness after drying. The material that gives value to the vanilla is a pulp developed in the walls of the capsule, of delicious perfume, and which is used in numerous compositions to give its appropriate aroma. Chocolate is perfumed with it; ice cream and soda waters are often taken with vanilla. The cook employs it in custards and cakes, and the confectioner uses it to make up his varieties of candy. It has been sometimes employed as a medicine in low fevers and nervous complaints. The odorous principle of vanilla cannot be obtained by distillation with water.

Vanilla is gathered in the eastern and southern portions of Mexico by the native Indians, and sold to the traders at different points, who prepare it for market. In this preparation, which consists in drying and oiling the pods, they become more or less wrinkled, and the colour changes to black or dark brown. There are four different varieties of vanilla, depending on the locality whence it is derived. The best comes from the forests of Oaxaca. Vanilla is imported from Brazil, but it is a very inferior article.

The vanilla has been cultivated with success in the hot-houses of Europe. In 1836, M. Morren, of Liege, obtained a great number of beautiful capsules, filled with a pulp as delicious in perfume as the best Mexican vanilla. Others have been equally successful, and the probability is that vanilla will be raised in our own country, as good as the best in market. The English have already carried the plants to their eastern colonies.

Chemistry and Pharmacy.

BY SIDNEY W. RICH.

THE *Lancet* alludes to Professor Frankland's report on the quality of the Metropolitan water supply during December, who again refers to the excellent effect of Clark's water-softening process, as applied to his own domestic supply from the Grand Junction Company. The water so treated is, he says, bright and sparkling, and pleasant to the taste; unlike the water in the state in which it is delivered by the company. The softened and purified water "does not curdle soap and block up the pores of the skin with an unctuous and dirty solid," when used for personal ablution. No one who has experienced the discomfort of washing in London water during the present severe weather, but will hope that the repeated expression of Dr. Frankland's opinion, as to the practicability of applying this process to the London water-supply, will have its due weight when the promised legislation on the general question takes place.

ON BROMIDE OF POTASSIUM.

In the *Écho Médical et Pharmaceutique* we find a communication from M. Adrien, who considers, from the results of his experiments, that bromide of potassium is seldom sold in a state sufficiently pure for medicinal purposes. The analysis of ten samples obtained from the principal chemical manufacturers showed that they contained proportions of bromide of potassium, varying between 62.8 and 91.6 per cent., while they were nearly all contaminated by varying proportions of moisture, alkaline carbonate, and iodide, chloride, sulphate and bromate of potassium. The presence of iodide of potassium in three of the samples was very objectionable, although the proportion was small; in respect to amount the impurity which took the lead was chloride of potassium, of which one sample contained as much as 30 per cent. The author also pointed out that the presence of bromate of potassium might give rise to serious accidents, owing to the possible production of free bromine by reaction with acid fluids, such as the gastric juice, and consequent irritation of the mucous membrane of the stomach. Bromide of potassium intended for medicinal use should, therefore, be subjected to more careful examination, but the author is of opinion that wilful fraud need not be suspected, but that any probable impurities will be due to the process of manufacture, and, therefore, that it is possible to indicate a process by which the purity of the sample may be

* From the *American Grocer*.

ascertained. He proceeds as follows: 10 grammes of the salt are divided in such a quantity of distilled water that the solution shall measure 100 c.c., and this is divided into ten equal portions. The solution, when treated with hydrochloric acid, should disengage a few bubbles only of carbonic acid, if the disengagement is more abundant, a quantitative estimation must be made, and this should not indicate more than 1 per cent. of carbonate of potassium. To another portion one gramme of benzine and several drops of bromine water are added, when the presence of iodide is indicated by the rose coloration; care should be taken not to add an excess of bromine water as this will prevent the formation of the rose colour. Sulphates may be recognised by testing with nitrate of barium, and bromates by the elimination of free bromine, on the addition of concentrated sulphuric acid. The proportion of chloride of potassium may be ascertained by means of a volumetric solution of nitrate of silver, suitable precautions having been taken.

BEETROOT DISTILLATION.

The *Lancet* draws attention to Dr. A. Voelcker's report on the culture of beetroot in Great Britain, and the distillation of beetroot spirit, a subject to which the *Lancet* is glad to give prominence, because the cultivation of the root, for the purposes of distillation, is likely to gain ground in this country, having been carried on in France, Germany, and Belgium, for more than a quarter of a century. From this report it appears that there are five chief varieties of beet, of which the Silesian is most largely grown, as it produces the greatest weight of roots and of sugar per acre. Sugar-beet is now grown in Suffolk, Berkshire, and Surrey, and the average amount of sugar obtained from these roots is from 9½ to 10½ per cent. The report is published at the instance of Messrs. D. Saville and Co., who have fitted upwards of 350 beetroot distilleries in Europe, and seven only in Great Britain, five of which are at Bascot, in Berkshire, one at Leith, and one in the neighbourhood of Norwich.

Veterinary Notes.

THE TREATMENT OF COWS.

IT is exceedingly common to find that heavy well-fed cows, purchased in calf, "drop" immediately after a safe and ready delivery. These animals have been kept well, on rich nitrogenous food, with little exercise, and are often heavy milkers by repute. Their history might sometimes reveal that they had been sold for fear of an attack of milk fever, owing to a previous seizure. It is well known that a peculiar susceptibility is engendered by the disorder, and unless great precautions are taken, a second and fatal attack will carry off a cow that has once dropped. Apart, however, from any special predisposition, any animal that is plethoric needs to be treated prudently at so critical a period. It must not be permitted to eat *ad libitum*. Regulating the amount and quality of food is an important matter, and exciting the secretions so as to render unlikely any congestions or apoplectic disease of the nervous centres. As a rule, animals are better, under proper management, without physic; but when we have to take much for granted as to the system adopted by persons who get up stock for sale, it is prudent to adopt precautionary measures. These consist in periodic doses of nitre, sulphate of soda, or Epsom salts. A good aloetic and saline purge six weeks before calving, followed a month later by a mild saline aperient, aided by warm water injections, may be regarded as the safest means of preservation. The practice of bleeding is still very common in remote parts of the country, and as a remedy on the first manifestation of symptoms, such as a tottering gait and wild staring look, there are veterinarians who consider that the practice is not by any means to be despised. Our advice to farmers is, to leave dangerous remedies alone. There is none so dangerous as that of drawing blood, and a good manager may usually avert attacks such as we are referring to, by simple and efficacious purgatives or diuretics. It is not so generally known as it might be, that to the veterinary profession belongs much of the credit of abolishing blood-letting. Free ventilation and stimulating remedies, as opposed to depletives and fine air, found favour with

veterinarians long before medical men perceived what they fancied to be a "change of type of disease." So far as the cows are concerned, instead of diseases being of a lower type, and characterized by milder congestions and inflammations than formerly, circumstances have proved the very common development of a plethoric or full-blooded condition and its fatal results. Nevertheless, we say, avoid the lancet and the fleam, and rely more on moderate diet, exercise, and medicines which excite the action of the kidneys, skin, and bowels.—*Milk Journal*.

ACONITE.

(BY W. HUNTING, M.R.C.V.S.)

The only preparation of Aconite used in the treatment of the lower animals, is the tincture usually known as Fleming's. It is used internally and externally, of the latter I have no personal experience; an able practitioner however, tells me he has found the following mixture a very useful application to painful joints in oxen suffering from rheumatism.

Tinct. Aconite	...	...	...	1 part.
Chloroform	...	...	...	1 part.
Sps. of Wine	...	...	...	3 parts.

About a drachm is applied with an old tooth-brush, once a day.

Internally aconite is used as a sedative or perhaps more correctly as a *cardiac* sedative.

A few veterinary surgeons add aconite to their colic drinks as an anodyne, the majority, however, employ it solely with a view to lessen the heart's action. This it certainly does, not immediately, but after a short space of increased action. The depressant effect lasts for three or four hours.

Great care must be exercised in using this drug, as poisonous symptoms have been noticed in horses, after the exhibition of twenty drops of Fleming's tincture. On the other side, I have frequently given this dose every four hours, till a drachm has been taken, and seen no bad sign. At the risk of being thought mendacious, I may mention two cases in which I gave enormous doses by way of experiment, both were witnessed by two other veterinary surgeons still in existence.

An adult farm horse, incurably lame, was given three drachms of the tincture, and in a few minutes showed poisonous symptoms. The pulse became small and weak, and rose rapidly to 70 per minute, the breathing was slightly quickened, and repeated efforts to vomit were noticed.

As the horse cannot vomit, the effort resembles a hiccup, the neck is arched, the nose drawn in, and a convulsive action of the diaphragm occurs; this in the horse is the diagnostic symptom of aconite poisoning.

The above symptoms continued about half-an-hour, when the animal was killed, as time would not allow further observation.

The other case was a black "lurry" horse, aged, healthy, but "done work." He got ten drachms of the tincture and never showed a symptom for an hour, when he was shot. In neither case did the stomach show any signs of irritation. The tincture used was from the same bottle in both cases, a drop or two of it on the lips and tongue produced a most abominable tingling which lasted for an hour or two.

Believing, then, that aconite is either uncertain in its action, or that some animals resist it better than others, I always use small and repeated doses till the desired action is attained. I give 10 drops, and may repeat this in 2 hours; but if not able to personally watch the case, only repeat it every 4 hours. As a cardiac sedative, aconite is indicated in simple fevers, and during the constitutional excitement accompanying pleurisy, pneumonia, and severe injuries. I had better say that aconite must not be used to lower the pulse in injuries if there is any tendency to relapse from shock.

I always use it in combination, as—

Sp. Eth. Nit.,	ʒij.
Liq. Ammon. Acet. (dil.),	ʒiv.
Tr. Aconite,	ʒss.

A wineglassful every four hours.

This mixture must not be continued long, as it soon acts upon the kidneys.

The ox requires a larger dose than the horse—from 20 to 30 drops. It is specially indicated in the vascular excite-

ment dependent upon rheumatism, and it may be used in the first stages of "lung disease" and other acute disorders.

Although it is said that goats eat the leaves and flowers of monkshood with impunity, the weight of evidence is to prove that all animals can be poisoned by it, and that but too readily. The poisonous effects of aconite, as of all other vegetable substances, meet with greater resistance in ruminants than in other animals, those requiring the same dose as the horse to produce similar physiological effects. A professional friend of mine, who made a series of experiments on "braxy," says he found the tincture of aconite the best remedy, and he used it in doses of 30 drops 3 times a day. The dose for the dog is from 1 to 2 drops.

I refer throughout to "Fleming's Tincture."

Homœopathy.

THE WHOLESALE AND RETAIL TRADE.

AT a recent meeting of the Homœopathic Society, of Liverpool, Mr. Thompson read a paper entitled "Notes on Homœopathic Pharmacy," from the conclusion of which we extract the following remarks, leaving our readers to consider them:—

"The future of homœopathy must greatly depend upon the care and attention exercised by its pharmacists, for upon their conscientiousness the skill of the physician is frequently at stake.

As a science homœopathic pharmacy is, we believe, making sure strides, if not rapid ones, and we hope for the day when each town shall be able to support a purely homœopathic chemist in place of leaving our delicate attenuations to the merciless hands of ordinary drug dealers. The latter practice we believe to be most injurious to homœopathy, as to our knowledge it is a frequent temptation to fraud, often yielded to, and we trust to the kindly help of the medical faculty to warn their patients in cases where *genuine* medicines are procurable in the district.

We are frequently applied to by chemists for tubes, corks, labels, and unmedicated pilules, but *without medicines*; and although we refuse to supply the unmedicated pilules, confectionary houses are now manufacturing them and selling them to chemists on a large scale. To one of these chemists we rather suspected, we applied for *Lachesis 2* and were at once supplied, proving its non-integrity."

The non-integrity of *Lachesis 2* was assumed because Mr. Thompson had previously stated the quantity of genuine *Lachesis* (snake poison) was so limited that no stronger dilution than the third could be procured.

COUNT MATTEI'S MARVELLOUS MEDICINES.

Dr. Acworth, whose article in the October issue of the *British Journal of Homœopathy* on the subject we commented on recently, is violently offended with the editor of that periodical for publishing his article if he did not agree with it, or for not agreeing with it if he published it. He (Dr. Acworth) seems still to believe in the hotch-potch of marvels which he formerly fathered, and which were about as probable as "Gulliver's Travels." This is to us the most melancholy feature in the case. As we before remarked, we always read with pleasure what Dr. Acworth writes, but we must consider that he has this time broken his usual custom, for he closes his letter with the remark that he "is not one who is wont to waste his words."

[We erred in attributing the authorship of the "Homœopathic Alphabet," which we quoted from the *Homœopathic World* last month, to Mr. Tirrell, of Hanley. Mr. Tirrell himself corrects us, and the *Homœopathic World* also mentions that we have guessed wrongly, giving the author as Mr. J. Tomlins, of Worcester.]

MR. S. COLLIS, chemist, Cheadle, has been fined the mitigated penalty of £6 5s. because somebody sold to somebody else a bottle of spirits in his shop, Mr. Collis himself having nothing to do with the transaction, nor deriving any benefit whatever from it. The Bench unequivocally expressed their sense of the injustice; but, as we understand it, they had no choice in the matter but to convict. This is curious law if it is so, for the same principle would render a person responsible for any theft or murder which should be committed on his premises.

Medical Gleanings.

THE Government Medical Bill of last session, which was so unsatisfactory to the profession, chiefly because it failed to reform the Medical Council, resulted, as our readers will remember, in a break-down, occasioned partly by the determined opposition offered to it by the medical practitioners of the country, and partly by the serious events abroad, which demanded so much attention from Ministers. Medical men, however, are still unanimous in their desire for an Act to regulate and render uniform the portals of examination whereby the profession shall be entered henceforth. During the recess, and in anticipation of a renewed campaign next spring, several amateur legislators are getting ready Bills for approval. The British Medical Association has submitted one, and the *Lancet* now offers its own attempt. The latter is excellently drawn up, and seems to meet with much approval from these members of the profession who interest themselves in these matters. As the subject will no doubt be much discussed during the few months that follow, we shall in a few sentences recapitulate the present state of affairs. At this moment in the United Kingdom there are nineteen bodies authorised to grant licences for the practice of medicine. The standard set up and the fees demanded by these nineteen corporations vary very considerably, and as a matter of course the qualifications required vary also. The Medical Council does not at present include any representatives of the general body of the profession. Its members are nominated partly by the Crown and partly by the existing examining bodies. The Government Bill left this Council untouched, but left to it the appointment of three examining centres,—one for each division of the United Kingdom. The *Lancet* Bill proposes, on the contrary, that the Medical Council shall be reduced to twelve members (the present number being twenty-four), the Crown, the existing corporations, and the profession, each to select four. This is the distinguishing feature: the Government proposed an irresponsible Council with unlimited power; the *Lancet* demands an elective Council, at least to some extent, which can thus be checked by the general body of the profession, the final object in both cases being that every practitioner shall henceforth be compelled to pass through one uniform curriculum and examination, the three examining bodies being all appointed by, and responsible to the General Medical Council thus formed. If any such Bill is brought forward, it will be advisable for chemists to look to it closely. Answering a correspondent, the *Lancet* says that the adoption of its Bill would ensure heavy penalties against anyone practising medicine who was not qualified.

We have carefully read the clauses, wherein penalties are mentioned, in both Bills, and confess ourselves unable to see this in its naked simplicity. The penalty seems to be incurred only when a title is unlawfully assumed, the following paragraph, which we quote from the *Lancet's* newer Bill, giving the gist of the whole:—

"If any person who for gain either practises medicine or surgery, or is engaged in the cure or treatment of diseases or injuries, wilfully takes or uses any of the above-mentioned designations to which he is not entitled, he shall for every such offence be liable, on summary conviction, to a penalty not exceeding £100."

This, as we read it, is very different from the comment on it by its presumed author. There is not much probability, however, that Parliament will ever admit into law any of the propositions which medical men are so ready to submit, the simple objects of which are to secure more power and income to themselves, and which would result in an immense inconvenience to the country.

Dr. Oliver Wendell Holmes of Boston, (U. S.), who attained popularity some years ago by the publication of one of the dreariest books ever published, "The Autocrat of the Breakfast Table," has inflicted on the medical world a long poem, apparently humorous, which he calls, "Rip Van Winkle, Jui., M.D." We cannot see much in it, but some of our London contemporaries, apparently occupied with parties about Christmas time, lumped the whole in their journals, and so got rid of the printer for a few short hours. The best stanza in the poem describes the doctor's dispensary as it was before he took a dose of a certain elixir.

For outward griefs he had an ample store—
 Some twenty jars and gallipots, or more:
Ceratum simplex—housewives oft compile
 The same at home, and call it "wax and ile;"
Unguentum Resinosum—change its name,
 The "drawing salve of many an ancient dame;
Argenti Nitras, also Spanish flies,
 Whose virtue makes the water-bladders rise—
 (Some say that spread upon a toper's skin
 They draw no water—only rum or gin)—
 Leeches, sweet vermin! don't they charm the sick?
 And Sticking-plaster—how it hates to stick!
Emplastrum Ferri—ditto *Picis*, Pitch;
 Washes and Powders, Brimstone for the — which,
Scabies or *Psora*, is thy chosen name
 Since Hahnemann's goosequill scratched thee into fame,
 Proved thee the source of every nameless ill
 Whose sole specific is a moonshine pill,
 Till saucy science, with a quiet grin,
 Held up the *Acarus*, crawling on a pin!
 Mountains have laboured and have brought forth mice:
 The Dutchman's theory hatched a brood of—twice—
 I've well nigh said them—words unfitting quite
 For these fair precincts and for ears polite.

The American doctor should get on the staff of the London music halls. The joke of just missing a vulgar word which the rhyme suggests, is always popular at these places.

There is sometimes a want of taste exhibited by medical men and medical journals which does not recommend them to English ladies and gentlemen. The discussion on the Contagious Diseases Act, and on the admission of Female Medical Students, in the various journals, has furnished abundant opportunities of remarking on this. We recently read in a daily paper a letter signed "Charles Kidd, M.D.," directed against the famous letter which had a few days previously appeared in the *Times*, with the signature "Thomas Carlyle" attached. The writer, whose literary position ought to be rather strong, described Mr. Carlyle's comments on the European war as "imbecile rant," and used other expressions of a similar character. Of course this is only Dr. Kidd's way of saying that he does not agree with Mr. Carlyle, but he might have said that in a less coarse and more forcible manner. Then soon after we read in the *Medical Times and Gazette* a leading article entitled "Squatting Like a Toad." This expression we find is to be discovered in "Paradise Lost." Milton applied it to Satan. The *Medical Times* applies it to John Stuart Mill and others who maintain the doctrines concerning marriage life known as Malthusian.

The medical students at Edinburgh Infirmary seem to rival the gentlemen at Guy's. They are determined to prevent, if possible, the association of ladies with them in their classes, and for this purpose they raise a riot and literally mob their female rivals. We notice that for the present the ladies are excluded. At the last meeting of the managers the votes taken showed 96 for and 100 against them. Remarking on the outbreak of riotous conduct among the male students at Edinburgh, the *Medical Press and Circular* thus expressed its own kindly feelings:—"If they make martyrs of the female students, we shall ourselves almost be driven to argue in their favour. The proper method of manifesting their disgust of unwomanly and immodest tendencies would be to shun contact or speech with female students as unworthy to be treated with the consideration and gallantry due to modest ladies."

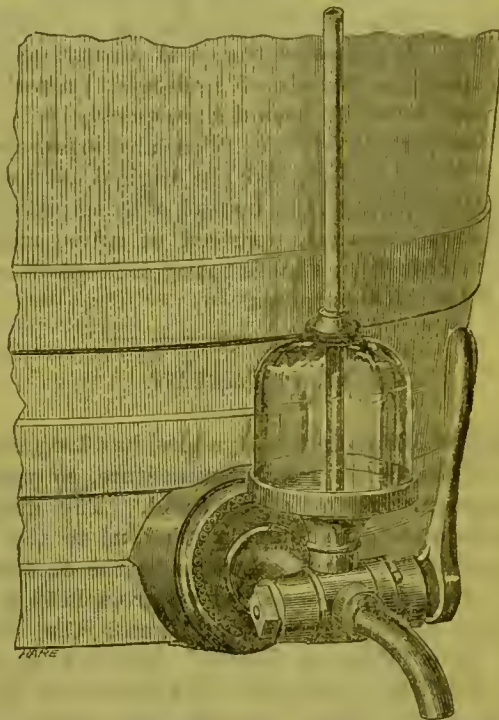
Want of space compels us to cut short our gleanings this month, but we cannot close without allusion to a subject which has had the run of all the medical papers during the past few weeks. We allude to the approaching marriage of Miss Garrett, M.D. The brilliantly successful career of this lady has not, we hope, closed yet. We have hardly had time to congratulate her on her triumphant election to the London School Board, when her announced engagement calls forth our congratulations again. We beg pardon, this time we congratulate Mr. Anderson.

THE Worcester Board of Guardians have accepted the tender of Messrs. Anderson and Virgo, Foregate-street, for the supply of drugs.



BARNETT'S "REGISTERED" MEASURING TAP.

WE show a drawing of an invention of Mr. S. Barnett of Hoxton, for the exact measurement and transference of liquids into bottles without any waste or possibility of mistake. The original application of this tap with the glass measure, as shown in the drawing, is for supplying



the syrup to the bottles in the process of bottling lemonade. For this purpose it answers admirably, as by simply turning the handle up and down, the glass is successively filled and emptied. Of course the same principle is applicable for all liquids, and for paraffin it strikes us as being a very clean and safe process of measurement. For such a case as this, Mr. Barnett supplied graduated glasses. The long pipe seen in the engraving is an air-tube.

NEW TOILET PREPARATIONS.

THERE are lying before us several new articles of this class. Mr. Rimmel's Photocrome, which is said to change the hair to a dark colour solely by the action of light, is worthy of special remark, as marking a new era in the history of hair dyeing. Mr. Lineham, of Newark, is introducing to the trade his Hair-dressing Balsam, for which he claims excellent properties, and of which it is only possible to say that it is most pleasant to use. Robare's Restorino is new, and is warranted to be a non-poisonous hair-dye. We can only mention this statement at present, some day we shall possibly make a few more analyses as we did two years ago. Lastly, we have Messrs. Millard's Invisible Face Powder put up in the same stylo as the invisible wool which we mentioned last month. This certainly does appear to be a safe cosmetic. We mention last—because they were received last—two articles for the toilet from Mr. H. C. Gallup, of Oxford-street. The Mexican Hair Renewer we set aside for examination, possibly on some future occasion; but the Fragrant Floraline we can spare a word of praise for now. Dr. Atfield certifies the

safe character of this preparation, and speaks highly in its favour. It is dressed up in a most attractive manner, and we do not doubt that it is an article which will take with the public, to whom we understand it is likely to be boldly introduced.

T E N A X .

MESSRS. SOUTHALL, SON, and DYMOND, of Birmingham, are bringing out, under the above name, a new kind of oakum, for surgical dressings. Oakum is the untwisted fibre of tarred ropes, and it has been employed in surgery for some years, its value having been first discovered, we believe, in the military hospitals of America during the Civil War in that country. It possesses the great advantage over lint, for application to wounds, of antiseptic properties; and while it is said to heal a wound more quickly, it is certainly likely to heal it more *healthily*, if such an expression can be tolerated. Tonax is made, like the original oakum, entirely from old tarred cordage, but instead of being picked by hand it is broken up, cleaned, deprived of saline matter, and carded by machinery. That is to say, it is oakum expressly prepared for surgical purposes.

NEW TARTAN.

THE village of Mauchline, in Ayrshire, has long since been the seat of the tartan wood manufacture, so popular for fancy ornaments all over the world. The approaching royal marriage has given quite a stimulus to this industry by the invention of two new tartans for the occasion. The "Lorne" we have not seen, but we are told it is a happy combination of the "Campbell" and the "Hunting Stuart." The "Princess Louise," designed by Mr. Mac Ewen, of the firm of Wilson and Amphlett, of Mauchline, is a really pretty plaid; and the great variety of wood manufactures, including cases for smelling bottles, puff boxes, thermometers, and many other useful and ornamental articles for which this firm is famous, never looked more attractive than when dressed in the "Princess Louise."



AMATEUR PHYSIC.*

WE shall hardly be accused of any undue professional leaning, nor have we hesitated to condemn the arrogant presumption of certain medical representatives who would make it almost a crime for any one not duly qualified to form a medical opinion, especially if such be counter to generally received notions. The art of healing and the hope of lengthening life are so likely to fascinate many minds that we would hardly check the pursuit of such an aim, even though it may cost occasionally the infliction of such an essay as the one now before us. We hold, therefore, that Mr. Hibbert has a perfect right to make what medical discovery he pleases, and to promulgate it in just such manner as he may deem best; and further, we are tolerably convinced that Mr. Hibbert himself has the most firm and simple faith that he has made a great medical discovery. To this extent we respect his work, but no further. By no possibility of human genius could he have presented us with a more palpable piece of quackery. There is nothing novel in his ideas. He says he has discovered a new antiseptic; he gives it no name—call it X, if you please. With a lot of truisms about antiseptic treat-

ment, he leads us through a number of diseases, all of which X will infallibly cure, either by external or internal application. Then we have a multitude of testimonials to X chiefly signed by ———. From the first page to the last, X is being glorified, and the book concludes with notices how the public, the trade, and the profession may procure X. We repeat that we acquit Mr. Hibbert of the intention, though we accuse him of the performance of a piece of genuine quackery. And if X is anything useful he has simply taken that step which will surely ruin its chances of adoption or even of experiment.

MEDICINE A SCIENCE.*

WE have read Dr. Foster's most suggestive essay with extreme pleasure, and commend its perusal to those interested in the perplexities which the study of medicine almost surely involves. There are not a few who question whether our acquaintance with disease and its treatment is far in advance of that of Aristotle. The apothecary, said Voltaire, pours drugs of which he knows little into a body of which he knows less. We die, we know not why. A certain abnormal condition of the body is labelled with a certain name, the varieties of that condition are classified, an old drug is fixed upon, or a new one is experimented with, which may or may not have some good effect when cases of this kind occur. Drug and disease are equally incomprehensible to us, and lo, there is the science of medicine! It is a mournful reflection, especially when we remember that for twenty centuries at least, thousands of the most powerful minds have laboured on this subject, millions of experiments have been tried—chemistry, anatomy, and microscopic research, to say nothing of astrology and divinity, have given marvellous aid. Nature has opened her abundant stores of remedies, and every human being has in some degree presented a point of investigation. In a rapid but instructive retrospect of the history of medical inquiry, Dr. Foster's essay suggests these thoughts, and at the same time, with logical cleverness, he shows that there is a method in medicine, and that after long groping, we are obtaining glimpses of a system which we shall comprehend more fully hereafter. To speak of vital force is, as he shows, confusing rather than otherwise, and isolated discoveries, however numerous and however valuable—as, for instance, the introduction of chloroform or quinine—do not of themselves construct a science. But we are beginning to understand something of the laws of health; we see too, dimly, under what conditions some diseases occur; we can, in fact, ourselves produce these in the healthy organism. Is it not, then, fair to hope that we shall ere long more intelligently combat them? "The chief obstacle to progress," we quote from the Essay, "is the undeveloped state of organic chemistry. When the chemist can detect those delicate chemical variations in the fluids of the body which serve as the origin of many diseases of nutrition, experimental pathology, rejoicing in this new light, will clearly detect the principal element of many diseases, which, like the bower of a labyrinth, has been, but for a single obstacle, so often gained."

We must quote, too, our author's conclusion, although we have already overstepped our limits, for it is both hopeful and eloquent.

"The courage of patience is the courage which, above all, is now wanted in medicine: to wait and work till, in the fulness of time, the simpler branches of the triad of medicine are made ready for the evolution of its crowning science. In the past, this courage has too often given way under a noble impatience of imperfection, and the work of ages has been destroyed by premature attempts at completion. Now chastened by repeated failures we have abandoned all inquiries into final causes as a search beyond the powers of the human mind, and concentrating our attention on the laws which regulate the succession and relation of phenomena we are content to move more slowly and more surely towards that perfect wisdom, whence comes perfect action. In this new stage of growth, medicine less and less

* "The New Theory and Practice of Medicine." Published by the author, William Hibbert Clarence, Cheetham St., Manchester.

* "Method and Medicine; an Essay." By Balthazar W. Foster, M.D. Professor of Medicine in Queen's College, Birmingham, etc. London: Churchills.

dependent on the blind gropings of empiricism and no more subject to metaphysical systems, will learn to apply to the great problems of health and disease the invariable laws of science; then the physician, no longer condemned to contemplate in miserable inaction the progress of a disease whose course he cannot control, will defeat by exact knowledge the subtlest approaches of his foe 'homo minister et interpretes nature, quantum seuit, tantum potest.'"

BENTLEY'S BOTANY.*

It is not our intention to criticise the work of Professor Bentley. As the standard manual of botany, certainly for pharmaceutical students, its position is undisputed, and it ranks among the first as a class-book or guide for all students of the flowery science. We simply desire to record, as it is our duty to do, that in preparing this second edition for the press Professor Bentley has laboured with great diligence and judgment, to bring up his manual abreast with the age, as well as to finish it as regards any shortcomings traceable in the former edition. A very cursory comparison of the two books is sufficient to show how ably this has been accomplished. Not that there are any very strikingly abundant additions, but, that here and there throughout the work we find traces of a careful introduction of the mention of important researches and discoveries during the ten years' interval between the publication of the editions. An examination of the indices also shows that many new plants are included. The note on page 396 of the first edition referring to the views of Darwin and others "admitting the very great ability with which these opinions have been supported, but, until further evidence be adduced adhering to former views as to the nature of species and varieties" is unaltered. Wisely we think; for successful though Darwin is and has been in attaining brilliant supporters it still remains an ingenious theory, and is not yet able to present such proof of its accuracy as to permit it to lie at the foundation of scientific investigation.

CHEMICAL PROBLEMS.†

THE increasing popularity of arithmetical questions in chemistry with teachers of the science is, no doubt, due to the peculiar merits of such questions. Professor Roscoe states in his preface to this little book, that his experience has led him "to feel more and more strongly that by no other method can accuracy in the knowledge of chemistry, be more surely secured than by attention to the working of well-selected problems." They are well calculated to exercise the reasoning faculties, and thereby to enable the mind to grasp and retain facts in a manner which is equalled alone by the experimental method of teaching. There is a great deal to be learnt in chemistry, which is beyond the reach of the latter method, and which is often much neglected. The book before us testifies that Professor Thorpe was fully sensible of this. It is small, consisting of only 67 pages including the appendix, but within this space he has condensed 220 excellent problems, with a great deal of the information required for working them, and numerous explanatory examples. The term chemical cannot correctly be applied to all the problems, but those to which this term is least applicable could unfortunately be ill dispensed with. The French system of weights and measures, forms the subject of the first twenty-two problems, the next nine are on the conversion of thermometric scales, most of these, and many of the following problems, contain facts which are worth remembering—a feature which will fully appreciated by teachers of the science who have not failed to observe the facility with which numbers or formulæ are remembered when made the subject of calculation. The next thirty-eight problems, follow methods which are given for correcting the volumes of gases for temperature and pressure, and for calculating the specific gravity of solids, liquids, and gases. A few problems

on the calculation of the specific gravity of mixtures, would have been a desirable addition to this portion of the work. The calculation of the percentage composition of substances from their formulæ forms the subject of thirty problems; in one of these we notice an error, the formula for magnesium pyrophosphate should be $Mg_2P_2O_7$, instead of MgP_2O_7 . The subjects next considered are, the calculation of the amount of material required to produce a given weight of any substance; or the quantity of the substance produced by the decomposition of a known weight of the material: followed by forty-four problems. The remainder of the book is devoted to the combination and decomposition of gaseous bodies, the calculation of the results of atomic weight determinations, calculations in connection with formulæ, and exercises on the specific heat, latent heat, calorific power, and calorific intensity of substances; concluding with an appendix which contains a table of combining weights, five other tables intended to facilitate the calculations, with one of logarithms, and another of antilogarithms. The problems are all new, with the exception of a few from the Owens College Calendar, and from the examination papers of the Science and Art Department. We are confident that teachers will find them very useful, they are suggestive, and capable with a little ingenuity, of almost unlimited extension. No student should consider that he has mastered the rudiments of the science, or attempt a chemical examination until he is familiar with such problems as these.

THE STUDY OF SCIENCE.*

THOSE who are not teachers or who have paid no attention to the subject, generally speaking, lose sight of the aims which every right system of education ought to keep distinctly in view. Those who have pondered on this all-important topic differ entirely in opinion from the old-fashioned school of pedagogues. Formerly it was thought that a lad on returning from college had made poor use of his time if he could not quote off, upon occasion, half a dozen trite and often stupid old adages from half-forgotten Greek and Latin authors. Now, thank goodness, pedantry of this kind is quite out of fashion. What we look for is not a miscellaneous pile applicable to no useful purpose, neither elevating nor even capable of affording enjoyment to the mind which it encumbers. We now expect, not so much to find stores of learning as a cultivated intelligence. It is no longer enough that a man can say I know so-and-so, he must be able to show that he is prepared to do something.

The great business of all, the school and college teaching of the future, will then be to fashion the mind, whilst it retains its plasticity, in a mould of order, method, system; to show not only what to learn but very specially how to learn it. How powerful an instrument in promoting this great work, the study of natural science may prove to be, we have yet, in great degree, to learn. It behoves teachers of science therefore, who have any love for their work, to be on the *qui vive*. The education of the nation is the social problem of the day. It is for them to step in and show the substantial claims which a close intimacy with natural laws has upon the attention of every one. Public interest seems to be gradually awakening, and the old order of things giving place to new. Such being the case, books on different branches of natural knowledge will probably in future take a more respectable rank among those which no gentleman's library should be without; and science in some garb or other will probably form an integral part of the education of all intelligent people. But let every one be on his guard, there are false prophets abroad, blind leaders of the blind. At such a time when a large and increasing demand for instruction will inevitably be responded to by the wholesale manufacture of teachers out of all sorts of materials, often indifferent, or worse,—

"Skulls that cannot teach, and will not learn,"

it is really a pleasure to welcome a book such as the one which lies before us.

Mr. Valentin is well known as an accomplished and experienced teacher; his Text-Book of Practical Chemistry

* A Manual of Botany. By ROBERT BENTLEY, F.L.S., &c. London: Churchills.

† Chemical Problems. By T. E. THORPE, Ph.D. Manchester: J. Galt and Co.

* A Laboratory Text-Book of Practical Chemistry. By WM. G. VALENTIN, F.C.S. Churchills. 1871.

is what we should have expected from him. It is admirable. Though evidently not intended for children, but for those who desire seriously to apply themselves to mastering the principles of the science, it commences *ab initio*; whilst by no means disdaining simple matters, it is so thorough that the student who faithfully works through it experimentally will find himself at the end of his course a chemist of far more than average attainments. We cannot pretend to describe it minutely, and such description would be comparatively superfluous. Those to whom the description would be interesting, we may safely predict, will find the book valuable.

The first half is devoted to a very excellent description, aided by artistic and sensible cuts, of all the common operations of the laboratory, including the study of all the most important acts of combination and separation among the chief of the elementary bodies. And the best of it is that all are so selected and planned as to lead every step towards principles and generalities of the highest importance. All this is pursued experimentally. How could it be otherwise? To attempt chemistry without experiment would be like trying to learn shoemaking out of a book.

The second part of the work is occupied by the details of qualitative analysis. Very excellent tables will be found here, and there are but few instances in which a difference of opinion could exist as to the efficiency of the processes recommended. If we might be allowed to say it, we should have thought it hardly necessary to introduce "constitutional" formulæ into the tables, they are a little unwieldy. The process for separation of barium, strontium, and calcium, too, does not strike us as the best, at least, for the use of students.

It is the praise of chemistry as a study that it exercises every faculty. Chemical analysis in the highest degree possesses this recommendation. The powers of observation, the memory, the judgment, are one or other constantly in demand. With working space in a laboratory, perseverance, and such a book as Valentin's Practical Chemistry a student may do much towards his own mental culture. He will not only acquire sound and most important knowledge, the practical utilisation of which may not improbably lead directly and will certainly help to fortune, but will do more to accustom his mind to clear and well-defined ideas than by a much longer application to any of the customary ingredients of an ordinary education.

THE CHEMISTS' AND DRUGGISTS' ALMANAC AND DIARY.*

THIS book is a great improvement on all former editions, and is more than ever an indispensable counter companion to the pharmacist. The diary arrangement gives a page to a week, and just comfortable room for each day's memoranda. We do not think, however, that this part of the work will be fully developed till it attains folio magnitude; only then will it take its proper place on the desk. The literature of the "Almanac" comprises an exhaustive account of work done in Pharmaceutical Chemistry during the year 1870, by Professor Atfield; directions for performing the Gravimetric Tests of the British Pharmacopœia, by Mr. Tilden; and a paper on Chemical Tests for Medicinal Articles, by Mr. Sidney W. Rich; besides much information on legal and commercial matters, and innumerable hints of great value to every business man (most of them of especial value to the pharmacist) pushed into every spare corner. Dr. Atfield's paper omits nothing; from hydrate of chloral to Bouillon's method for forming pencils of any brittle caustic substance by incorporation with melted gutta-percha or paraffin,—everything finds appropriate mention. The notice of the artificial production of alizarine is very interesting. If the value of Mr. Tilden's contribution be measured by its length, a very unfair estimate will be the result. In very little space a remarkable amount of information is conveyed on apparatus, manipulation, etc., and of such character, that if the given directions be followed, the gravimetric tests of the Pharmacopœia may be performed by any pharmacist for himself. The manufacturer is at his mercy. In twenty-nine pages Mr. Rich makes us acquainted with every needful

test for ascertaining the presence or absence of adulteration in chemicals and other articles of *Materia Medica*. The tests given are not simply those of the B.P.; a choice is offered. Cinchona, as its importance demands, has a good share of attention; and Carles' process for estimating the quinine value of barks is here side by side with the official one. Together, Messrs. Tilden and Rich furnish a complete system of the qualitative and quantitative analysis of the British Pharmacopœia. On the very last page, side by side with the weights and measures, is a scale comparing the linear measures of the English and the metrical system. It shows clearly—and this mode of illustration cannot be too strongly recommended—that six inches are just equal to fifteen centimetres and two-fifths. We are sorry that it is the only notice of the metrical system to be found in the book. There is one feature of this Almanac which we cannot commend, viz., that part which professes to be a "Trade Directory." Possibly we may not understand the principle upon which this has been constructed, but it seems very curious that such a directory should contain only four names under the head of "Drysalters," one name under that of "Comb-maker, etc." The lists of manufacturing chemists and wholesale druggists are also very meagre and imperfect. It is a pity that a good and useful work should be disfigured by anything so defective as this. The Almanac deserves success, and will probably find its way into every pharmacy.—*Pharmaceutical Journal*.

THE HOMŒOPATHIC DIRECTORY, 1871.*

THE new volume of this annual is just to hand. The chief new feature which we find in it is an attempt to supply a list of all the homœopathic practitioners in the world. This is admitted to be only approximately correct and complete. The home list is, we believe, quite full and accurate. The towns in England are also given where no practitioner of this colour is to be found; and this part of the work is also elaborated so as to form to some extent a gazetteer; population, rate of mortality, and often a short notice of the town being added. Another part of the plan of this work is to furnish an abstract of the papers of permanent interest which have appeared in any of the homœopathic periodicals during the year. It is in this part of the work only that we find any notice whatever of the Homœopathic Pharmacopœia, published during the past year. We should have thought that the publication of such a work would have been important enough to have deserved mention in the editor's notice at the commencement of the work, wherein he professes to sum up the progress of homœopathy during the year. We do not even find it mentioned in the list of homœopathic works which is given, and where it is surely entitled to a place. This is probably an oversight. Possibly in a future edition, a list of the homœopathic chemists might be added to this directory, which would add considerably to its value. Otherwise, the work is an excellent specimen of methodical arrangement and condensed information.

MR. FRANK H. STORER, A.M., of Boston (U. S.), has commenced the publication of a work on chemistry of no mean dimensions. His scheme is to present in cyclopædic form, a manual of quantitative analysis. A short examination of the first part of the work now before us, and we have not been able to go through it carefully at present, shows us that Mr. Storer has devoted a vast amount of labour to the development of the idea expressed in the following sentence:—"The experiment is certainly worth the trying whether a definite system of classifying substances in alphabetical order, and of referring each and every process to the fundamental fact or principle upon which it depends, will not greatly facilitate both the study and the practice of analysis." Methodical arrangement is carried to the utmost extent in the construction of this book, as will be best seen if we take one example at random. We open the pages at Bismuth, the article on which is divided into the following paragraphs:—

Principle I. Insolubility of the metal in dilute nitric or acetic acids in presence of metallic lead or zinc.

Applications. Separation of Bismuth from certain other metals,—notably from lead.

* "The Chemists' and Druggists' Almanac and Diary," 1871. Svo, pp. 114. Chemist and Druggist Office.

* "The Homœopathic Directory and Annual Abstract of Homœopathic Literature, 1871." London; H. Turner and Co.

Then follow Methods A, B, and C.

Principle II. is its fixity when heated.

Applications. Estimation of bismuth in the oxide, sulphide, oxy-chloride, and salts of this metal.

The Method then follows.

Having comprehended the author's use of the terms "Principle" and "Application," it will be seen, we think, that such an arrangement as this offers rare advantages for the practical and practised chemist, as well as for the student.

AMONG a number of new periodicals lying on our table we may mention the *Milk Journal*, which, starting from milk as its central object of interest, discourses on butter, cheese, eggs and poultry, finding its way also to the cattle plague, the foot and mouth disease, and other matters of interest to dairy-keepers.—The London Institution has commenced the issue of its journal, which is intended to be a monthly medium of communication between the managers and the proprietors of that old and wealthy establishment.—Messrs. Ballière, Cox, and Tindall launch a new medical monthly entitled *The Doctor*.—From New York we have received several numbers of the *American Chemist*, which has grown out of the American edition of the *London Chemical News*. It contains a large mass of matter, original and extracted, almost entirely of a purely scientific character.

Corner for Students.

CONDUCTED BY RICHARD J. MOSS.

Answers to the questions printed in this number will appear in our issue of March 15th. In consequence of the variation in our arrangements with regard to this department (see Editorial Notes), students will be allowed a month to prepare their answers instead of a fortnight as heretofore; but should any answers reach us after the 15th of the month succeeding that in which the questions appear, they will be disregarded.

The chemical formulæ employed in this section are based upon the new system of atomic weights, unless the use of the older system is specially indicated. In the *British Pharmacopœia* the symbols corresponding to those adopted here are printed in heavy Clarendon type. The new editions of Fownes's *Manual of Chemistry*, and Atfield's *Chemistry: General, Medical, and Pharmaceutical*, supply the data required for calculations, and are recommended as text-books.

QUESTIONS.

First Division.

I. GAS ANALYSIS.—Four hundred volumes of a mixture consisting of 100 measures of a gaseous hypocarbon, and 300 measures of oxygen, on being exploded by means of an electric spark, were reduced to 200 volumes. On agitating the residual gas with a solution of potassium hydrate, 100 volumes dissolved, leaving 100 volumes of a gas which left no gaseous residue when exploded with 200 volumes of hydrogen. What was the formula of the original hydrocarbon?

II. How many grammes of zinc and of sulphuric acid, containing 96.8 per cent. of real acid (H_2SO_4), would be required to produce the quantity of hydrogen at 748 m.m. pressure and $16^\circ C$. which would fill a perfectly spherical vessel measuring 12 decimetres in internal diameter? (A litre of hydrogen at the standard temperature and pressure, weighs 0.0896 of a gramme.)

III. HYDRARGYRI SULPHAS, B.P.—How many fluid ounces of sulphuric acid of the official strength may be prepared from the sulphur dioxide evolved in the preparation of mercuric sulphate by the Pharmacopœial process?

IV. VOLUMETRIC SOLUTION OF BICHROMATE OF POTASH, B.P.—What percentage of impurity is there in a sample of crystallized ferrous sulphate, 3.085 grammes of which require 35 cubic centimetres of this solution for complete oxidation?

V. SPECIFIC GRAVITY.—What is the specific gravity of a mixture consisting of 4 fluid ounces of a liquid having a sp. gr. of 1.4, and 9 fluid ounces of a liquid having a sp. gr. of .98?

Second Division.

I. HYDROCARBON.—A mixture consisting of one volume of a gaseous hydrocarbon, and three volumes of oxygen is exploded in a eudiometer; the product measures two volumes, and is entirely absorbed by a solution of potassium hydrate.

Give the name and formula of the hydrocarbon, and describe a process by which it may be prepared.

II. OXYGEN.—How many litres of oxygen at the standard temperature and pressure may be prepared from 5 grammes of each of the following substances respectively:—Mercuric oxide, potassium chlorate, manganese dioxide? (One litre of oxygen at 760 m.m. pressure and $0^\circ C$ weighs 1.43028 gram.)

III. THE ATMOSPHERE.—Describe briefly the principal natural means by which the general uniformity of the composition of our atmosphere is maintained.

IV. CUPRI SULPHAS, B.P.—How many pounds weight of this substance may be prepared from one ton of copper pyrites containing 85 per cent. of cuproso-ferrie sulphide ($CuFeS_2$)?

V. SPECIFIC GRAVITY.—A piece of metal weighs 26.531 grammes in air and 25.297 grammes in water. What is the metal?

ANSWERS.

First Division.

I. QUALITATIVE ANALYSIS.—The salt is sodium chloride. When this salt is heated with potassium chromate and strong sulphuric acid, a brown gas is disengaged, which condenses into a blood-red liquid, chlorochromic acid or chromic dioxide (CrO_2Cl_2). On the addition of ammonia in excess the colour changes to a yellow, owing to the formation of ammonium chromate ($(NH_4)_2CrO_4$); upon the addition of an acid, the yellow changes to a reddish brown, ammonium bichromate ($(NH_4)_2Cr_2O_7$) being formed.

II. ORGANIC ANALYSIS.—The formula of the acid was $C_7H_6O_3$ (salicylic acid). By dividing the relative quantities of carbon, hydrogen, and oxygen found by their relative atomic weights we find the atomic proportions of these three constituents, thus:—

$$C. 60.87 \div 12 = 5.0725;$$

$$H. 4.35 \div 1 = 4.3500;$$

$$O. 34.78 \div 16 = 2.1713.$$

From these numbers, it is evident that if we take the quantity of oxygen as unity there is just twice as much hydrogen and $2\frac{1}{2}$ times the quantity of carbon, and if we remove this fraction by multiplying by three, we have the formula $C_7H_6O_3$. As 1.052 parts of the silver salt left upon ignition 0.4637 parts of metallic silver, one equivalent of silver should be contained in 245 parts of the salt, in accordance with the proportion:—

$$.4637 : 108 = 1.052 : x \therefore x = 245.$$

Now, the molecular weight of the acid according to the above formula is 138, adding to this one equivalent of silver and deducting one of hydrogen, we have $(138 + 108 - 1) = 245$; the formula $C_7H_6O_3$ is therefore correct.

III. GAS VOLUME.—There are 6.661 grammes of sulphur in five litres of sulphur dioxide measured at $15^\circ C$, and 745 m.m. pressure. Sulphur dioxide consists of equal proportions, by weight, of sulphur and oxygen, its molecular weight is 64, and therefore its density referred to hydrogen is ($\frac{64}{2} =$) 32; but a litre of hydrogen at the standard temperature and pressure weighs .0896 of a gramme, so that the same volume of sulphur dioxide should weigh ($.0896 \times 32 =$) 2.8672 grammes, of which one-half, or 1.4336 grammes is sulphur. To find the volume to which 5 litres at $15^\circ C$. would contract at $0^\circ C$., we have:—

$$273 + 15 : 273 = 5 : x \therefore x = 4.7396.$$

To correct this volume for the given pressure, we have the proportion:—

$$760 : 745 = 4.7396 : x \therefore x = 4.646.$$

But we found that one litre of sulphur dioxide contained 1.4336 grammes of sulphur, therefore 4.646 litres contain ($4.646 \times 1.4336 =$) 6.661 grammes of sulphur.

IV. HEAT.—If one pound of snow $0^\circ C$. is mixed with an equal weight of water at 84° , the temperature of the mixture should be 2.5° ; because 79° (nearly) is the latent heat of water—that is, a given quantity of ice at 0° would, in becoming liquid, exhibit no alteration of temperature, although it had absorbed an amount of heat which would have raised the temperature of the same weight of water from 0° to 79° . Therefore, the snow in liquifying, takes 79° from the water, but the temperature of the water is 5° more than this, and consequently, the temperature of the mixture is the mean between 5° and 0° , or 2.5° . The heat required to raise the

temperature of one pound of water from 2.5° to 100° —viz., 97.5° , would raise the temperature of 97.5 pounds of water from 40° to 41° ; and as the latent heat of steam is 536, it follows that the conversion of a pound of water at 100° , into a pound of steam at the same temperature, would be effected at the loss of 536° of heat, which, if applied to 536 pounds of water at 40° , would raise its temperature to 41° ; the total quantity of water which would undergo this change is therefore $(97.5 + 536) = 633.5$ pounds.

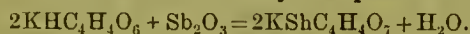
V. SPECIFIC GRAVITY.—The specific gravity of the mixture is .995. The relative weights of the two fluids are ascertained by multiplying the volume of each by its sp. gr. The sum of these numbers represents the weight of the mixture, which, when divided by the volume of the mixture, gives its sp. gr. thus:—

$$\frac{(1.27 \times 1) + (.94 \times 5)}{1 + 5} = .995$$

Second Division.

I. LIQUOR AMMONIÆ FORTIOR, B.P.—If ammonium carbonate were present in this liquid a precipitate would be produced on the addition of lime-water to it after dilution. If calcium were present it would be precipitated as oxalate, on the addition of ammonium oxalate. The absence of a precipitate with ammonium sulphhydrate, indicates freedom from the heavy metals in general. The addition of copper ammonia-sulphate should result in the production of a dark precipitate if sulphur salts were present. Chlorides, if present, would give a precipitate on the addition of silver nitrate, and sulphates on the addition of barium chloride to the liquid previously treated with an excess of nitric acid. The absence of general impurities, and the presence of the proper quantity of ammonia, are ensured by the quantitative and specific gravity tests.

II. ANTIMONIUM TARTARATUM, B.P.—The quantity of crystals obtained represents a loss of 20.004 per cent. on the theoretical product of the official process. According to this process, five ounces of antimony trioxide, and six ounces of acid potassium tartrate are boiled together, and the resulting antimony potassio-tartrate is then obtained by crystallization. The reaction may be represented thus:—



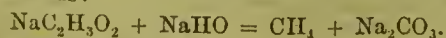
The molecular weights of the first two substances in this equation are 379 and 292 respectively, but the quantities of them employed are not exactly in this proportion, the antimony trioxide being slightly in excess. The theoretical product is therefore found by the following proportion, the weight of two molecules of antimony potassio-tartrate being 686:—

$$376 : 6 = 686 : x \therefore x = 10.9468.$$

The quantity of the salt which was obtained being 8.757 ounces, the loss per cent. is thus calculated:—

$$10.9468 : 100 = (10.9468 - 8.757) : x \therefore x = 20.004.$$

III. MARSH GAS.—This gas is evolved from the mud at the bottom of pools containing decomposing vegetable matter, hence the name marsh gas. Its production is due to the decomposition taking place in the presence of water, and in the absence of sufficient oxygen for the conversion of the carbon into carbon dioxide. This gas is also given off from the fresh cut surfaces of bituminous coal, and is known to miners as “fire-damp.” Apertures called “blowers,” from which it issues in large quantities for a long time, are frequently found in coal beds. Marsh gas is readily prepared by the following method, which was first proposed by Dumas. About 40 parts of crystallized sodium acetate, an equal quantity of solid sodium hydrate, and about 60 parts of quick lime are mixed together, and then heated nearly to redness in a retort. The gas is copiously evolved and may be collected over water, while a residue of sodium carbonate remains in the retort mixed with the lime, which does not take part in the reaction, but its presence renders the mixture nearly infusible, and thus prevents the sodium hydrate from acting on the glass. The reaction may be represented thus:—



IV. AIR.—The combustion of 100 grammes of carbon would require 945.693 litres of air containing 23 per cent. of oxygen by weight. As 12 parts of carbon require 32

parts of oxygen, 100 grammes of carbon should require $\left(\frac{100 \times 32}{12} = \right)$ 266.666 grammes of oxygen; but one litre of air weighs 1.226 grammes, of which 23 per cent. or $\left(\frac{1.226 \times 23}{100} = \right)$.28198 of a gramme is oxygen; therefore $\left(\frac{266.666}{.28198} = \right)$ 945.693 litres of air should contain the requisite quantity of oxygen.

V. SPECIFIC GRAVITY.—The specific gravity of the solid is 4.5. As the bottle holds 420 grains of alcohol, and its contents weigh 542 grains after the addition of 150 grains of the solid body, it is evident that $(420 + 150 - 542 =)$ 28 grains of alcohol are displaced. The substance is therefore $\left(\frac{150}{28} = \right)$ 5.35714 times heavier than alcohol, and its sp. gr. is $(5.35714 \times .81 =)$ 4.5, that of the alcohol being .81.

PRIZES.

The First Prize for the best answers to the questions of the First Division printed in our December number, has been awarded to

JOHN W. SMITH, Greece House, Woolshops, Halifax, who has already obtained a Prize in this Division.

The Second Prize for the best answers to the questions of the Second Division has been awarded to

F. W. FLETCHER, Totton, Southampton.

This student's name has seldom been lower than second in the list.

Marks awarded for Answers.

First Division.

	I.	II.	III.	IV.	V.	E.	Total
J. W. Smith (1st prize) ..	8	6	7	8	5	3	37
A. H. S. ..	8	6	6	4	5	3	32
J. H. Watson ..	4	5	4	4	5	3	25
Otho ..	8	6	0	8	0	2	24
E. J. B. ..	7	5	5	4	0	1	22

Second Division.

	I.	II.	III.	IV.	V.	E.	Total
F. W. Fletcher (2nd prize) ..	4	6	6	6	5	3	30
P. L. ..	4	5	5	5	5	3	27
Graham ..	4	5	6	5	0	3	23
W. J. Smith ..	4	3	5	6	3	2	23
Spes ..	5	1	5	6	2	3	22
Beta ..	4	0	6	4	5	2	21
J. M. J. ..	3	5	4	4	2	2	20
Mell ..	4	6	5	0	0	3	18
Chemicus ..	2	0	5	4	0	0	11
G. H. Holley ..	4	0	0	0	0	1	5

TO CORRESPONDENTS.

*. All questions forwarded to us for publication in this “Corner for Students” should be accompanied by the answers which the propounders believe to be correct. Communications should include the names and addresses of the writers; those which reach us after the first day of the month will be disregarded.

Prizes.—The students to whom prizes are awarded are requested to write at once to the publisher naming the book they select, and stating how they wish it forwarded.

A. H. S.—III. Your result was correct, but you appear to have copied the weight of the five litres of SO_2 incorrectly.

J. H. Watson.—I. Such a change as you represent in the first reaction may take place, possibly it is the first result produced by the addition of the ammonia. The reddish-yellow colour is due to an ammonium salt analogous in composition to the ordinary red potassium chromate. III. To ensure uniform results we gave the weight of a litre of hydrogen, but you employed other data.

Otho.—III. You have nothing to do with five litres of sulphur dioxide at the normal temperature and pressure, it is at 745 m.m. pressure and 15°C . that the gas has this volume, and it must undergo the necessary corrections, before a comparison can be made with the given weight of a litre of hydrogen, or else the weight of the latter must be ascertained under the same conditions as those which influenced the volume of the sulphur dioxide at the time of measurement. V. Your result does not agree with the statement given in explanation, and we cannot see how the latter was derived from the question.

E. J. B.—We are sorry to be unable to point out the sources of your errors. You should give us an outline and explanation of the method of calculation employed in each instance.

Graham.—I. The arsenical compounds could not be precipitated, as both are soluble in ammonia. V. The weight of the alcohol displaced is not 122 grains. This is the difference between the weight of the solid and that of an equal bulk of alcohol.

W. J. Smith.—V. You took .85 as the sp. gr. of the alcohol instead of .84. Spes.—The weight which you adopted for two molecules antimony potassio-tartrate included only one molecule of water instead of two.

J. M. J.—For the sake of uniformity we employ the atomic weights given in the Pharmacopœia, although they are not all quite correct.

Mell.—IV. The assumption that the supply of air was limited is not in the slightest degree warranted by the question.

Chemicus.—See remarks to E. J. B.

G. H. Holley.—1. The barium test is intended to detect sulphates, not sulphides. If. The conclusion that the theoretical product was 19 ozs. must have been accidental. IV. and V. Your answers to these questions appear to have been rough guesses; nothing short of absolute accuracy in calculations will satisfy us. If they are worth doing at all they are worth doing well.

Books offered as First Prizes.

Atfield's *Chemistry: General, Medical, and Pharmaceutical.* (Van Voorst.)
 Brooke's *Elements of Natural Philosophy* (Churchill.)
 Conington's *Handbook of Chemical Analysis*; with Tables of Qualitative Analysis adapted to the same. (Longmans.)
 Eliot and Storer's *Manual of Inorganic Chemistry.* (Van Voorst.)
 Fownes's *Manual of Elementary Chemistry.* (Churchill.)
 Fresenius's *Qualitative Analysis.* (Churchill.)
 Galloway's *Qualitative Analysis.* (Churchill.)
 Ganot and Atkinson's *Elementary Treatise on Physics.* (Longmans.)
 Garrod's *Materia Medica*; with Modern Chemical Notation. (Walton.)
 Noad's *Chemical Analysis, Qualitative and Quantitative.* (Reeve.)
 Northcote and Church's *Qualitative Analysis.* (Van Voorst.)
 Odling's *Outlines of Chemistry.* (Longmans.)
 Royle and Headland's *Materia Medica.* (Churchill.)
 Williamson's *Chemistry for Students.* (Clarendon Press.)
 Barff's *Introduction to Scientific Chemistry.* (Groombridge.)
 [Any other scientific book that is published at a price not greatly exceeding half-a-guinea may be taken as a first prize.]

Books offered as Second Prizes.

Bloxam's *Laboratory Teaching.* (Churchill.)
 Church's *Guide for Students in Agricultural Chemistry.* (Van Voorst.)
 Galloway's *First Step in Chemistry.* (Churchill.)
 Gill's *Chemistry for Schools.* (Walton.)
 Hofmann's *Introduction to Modern Chemistry.* (Walton.)
 Huxley's *Lessons in Elementary Physiology.* (Macmillan.)
 Oliver's *Lessons in Elementary Botany.* (Macmillan.)
 Orme's *Introduction to the Science of Heat.* (Groombridge.)
 Potts's *Elements of Euclid.* School Edition. (Longmans.)
 Roseoe's *Lessons in Elementary Chemistry.* (Macmillan.)
 Wormell's *Elementary Course of Mechanics.* (Groombridge.)
 Wurtz's *History of Chemical Theory.* Translated by Watts. (Macmillan.)
 [Any other scientific book which is sold for about five shillings may be taken as a second prize.]



LONDON CHEMISTS' ASSOCIATION.

ON Thursday, November 17th, Mr. BLETSOE in the chair, Mr. BROWNEN made some remarks upon

PHARMACOPEIAL WASTES.

He spoke of two kinds of wastes, first, those that occur in obtaining the ordinary chemical products of the Pharmacopœia, which consist of very common chemicals, as sodium chloride, in making antimonious oxide; ammonium sulphate, in making the iron carbonates; potassium nitrate, in making lead iodide; potassium chloride, in making mercuric iodide, etc. These salts, however, are so very cheap, that it is not worth the while of manufacturers saving them; but if a student, reading up for his examinations, took the trouble to evaporate such waste solutions, he would obtain some valuable specimens of the different forms of crystallography, which would amply repay him for his trouble. In making linimentum saponis a quantity of sodium margarate, insoluble in spirit, is left behind. Instead of throwing this away, it may be utilised for making the much-talked of Lin. Potas. Iod. cum Sapone, for by adding it to a solution of iodide of potassium in glycerine, spirit, and water, a smooth solid liniment is obtained, which is far preferable to that at present officinal. The deposit in liq. cinchonæ consists of resin and kinate of lime; the latter may be used for preparing the natural salt of quinine in a state of purity. The residue in the retort, after making spirit of nitre, he found on analysis contained sulphate, sulphite, and nitrate of copper. He believed that the changes which take place in making that article are more numerous and complicated than is generally stated in works on chemistry. The resinous matter left in making tolu syrup, dissolved in spirit, makes an excellent varnish for pills. Mr. Brownen lastly spoke of expensive wastes, as, for instance, in making some of the alkaloids there is an unnecessary loss in spirit, ether, and chloroform; and with regard to the use of ether in making Ext. Ergotæ Liquidum and Ext. Stramonii, Dr. Redwood himself had already stated that it was not required. The quantity of spirit ordered in the form for Ext. Coloc.

Co., he thought more than necessary. He classed the cochineal in Tr. Cinchonæ Co., and the large quantity of saffron in two or three preparations, among expensive wastes.

After an interesting discussion, in which several members joined, a hearty vote of thanks was given to Mr. Brownen for so ably bringing the subject forward.

A vote of thanks to the Chairman terminated the meeting.

On Thursday, November 24th, Mr. JEWELL in the chair, there being a small attendance, in consequence of the inclemency of the weather, Mr. SANDS' paper on "Sulpho-carbolates" was postponed, and the meeting instead discussed the "Notes and Queries" that were in the box, one of the chief questions being—

WHAT IS THE BEST EXCIPIENT TO USE AS A SUBSTITUTE FOR CONFECTION OF ROSES?

Mr. SANDS recommended the glycerine and tragacanth mass.

Mr. BEYNON said that it would hardly do as a substitute for rose confection in those cases where a bulky excipient was required, as, for instance, with morphia, calomel, or mercuric chloride.

Mr. BEEDZLER said it was advisable to use some inert powder, as starch or liquorice powder, or, still better, sugar of milk. First, to divide thoroughly the particles of active ingredient, afterwards adding sufficient to give the required bulk, and finally, making into a mass with the glycerine and tragacanth.

Mr. BEYNON thought that Mr. Beedzler's plan for making pills, the active ingredient of which was of small quantity, was the best; but as a substitute for rose confection he found that a mixture of three-quarters of an ounce of flour, with two ounces (by weight) of treacle, heated together, answered admirably.

A letter was received from Mr. SYMES, of Simla, expressing the pleasure he felt in hearing of the growing prosperity of the Association, and promising to forward in a short time some notes on "English Pharmacy in the East Indies."

Mr. JEWELL received a vote of thanks for occupying the chair, and was re-elected Chairman for the next meeting.

On Thursday, December 1st, Mr. SANDS gave his paper on the

SULPHO-CARBOLATES.

He commenced by giving a short history of the introduction of carbolic acid to pharmacy, and of its many applications to therapeutic purposes for internal use, although its highly corrosive property proved a serious objection, preventing its administration, even when much diluted, in sufficient doses. The difficulty was overcome by the introduction of the neutral sulpho-carbolates. Mr. Sands then related the process by which sulpho-carbolic acid is made. When sulphuric and carbolic acids are mixed in proper proportions they readily combine, producing at the same time much heat; it is necessary to take care that the sulphuric acid be not in excess, or an impure sulpho-carbolate, contaminated with sulphate, is produced. With this double acid, Mr. Sands remarked, an extensive series of salts is now prepared. Of these, the sodium salt is the one most frequently used, at any rate, as an internal remedy. The zinc salt is frequently ordered in lotions, and has gained some repute. Mr. Sands exhibited a large series of sulpho-carbolates of his own manufacture; they should be, he said, perfectly inodorous, and are very stable in composition, being capable of sustaining a considerable heat without decomposing. The ordinary dose of the soda salt is from ten to thirty grains, but much larger doses are occasionally given. This salt contains nearly 33 per cent. of carbolic acid.

On the conclusion of Mr. Sands' paper, a discussion ensued, in which Messrs. Parsons, Beynon, and Taubman joined.

A vote of thanks was given to Mr. Sands and to the Chairman.

On Thursday, December 8th, Mr. BEYNON in the chair, Mr. TAUBMAN read a paper on

REGULATIONS FOR STORING AND DISPENSING POISONS.

An animated discussion took place after the reading of the paper, and it was proposed and carried that the subject

should be again brought forward at an early meeting; a committee, consisting of Messrs. Taubman, Willmott, and Beynon, being appointed to consider the matter and to bring forward some definite propositions for consideration.

On Thursday, December 15th, Mr. BEEDZLER in the chair, the Chairman announced that the annual dinner of the Association would be held on the second Thursday in the new year, January 12th. He also announced that a general meeting of the Association would be held the succeeding week for business purposes, and for re-discussing the "Poison Regulations."

Mr. JEWELL then read a paper on

HYPOPHOSPHITES.

He said they were combinations of phosphorus with metallic oxides. In the action required, phosphorus passes into a low state of oxidation, having neutralising properties and giving definite compounds; they are easily decomposed by heat; part of the phosphorus being evolved, and part passing into a higher state of oxidation. This facility of eliminating phosphorus had brought the hypophosphites into notice as deoxidisers and as a mode of administering free phosphorus. Hypophosphorus acid may be obtained by decomposing the solutions of a hypophosphite, as, for instance, the barium hypophosphite by sulphuric hydrate, or the calcium salt by oxalic acid. It is a sour, unstable compound, incapable of crystallising. It has great reducing powers, per-salts being turned to proto-salts, and some, as the copper and silver salts, being reduced to the metallic state. Care is required in the manufacture of the hypophosphites, as violent explosions have attended the making of the calcium salt, and it is probable that like danger attended the making of other hypophosphites. In making the calcium salt, the milk of lime should be slowly boiled with phosphorus and water until the garlic odour of hydrogen phosphide ceases to be evolved. It is to this gas that explosions are due, hydrogen phosphide being spontaneously inflammable. The calcium salt crystallises in flat prisms with two molecules of water, which molecules can be removed. It was shown at the Chemical Society a short time ago, without decomposing the salt, that this water was, in fact, the water of crystallisation, and not essential water of composition. Various methods have been employed to obtain this salt by a safer process, as, for example, by slightly oxidising the phosphorus, etc. It had been introduced medicinally by Dr. Churchill and others, and is generally administered in solution or syrup, which should be as neutral as possible. The sodium salt may be made by decomposing the calcium salt, or it may be prepared in the same way, not being so dangerous to make as the calcium salt. The potassium and the ammonium salts may also be made by double decomposition. These salts, as in the case of the calcium salt, contained two similar molecules of water. Mr. Jewell remarked that these salts were deliquescent, and should be kept in a dry place, and in well-stoppered bottles, else they would become oxidised and less soluble. The chief salt of the metals proper is the ferrous salt, of which a syrup is in much demand. It may be obtained by either decomposing ferrous sulphate with the calcium salt, or by neutralising hypophosphorus acid with recently precipitated ferrous carbonate. The alkaloïds have also been used in combination with hypophosphorous acid. The quinine, and the quinine and iron salts in the form of syrups, were frequently required, the latter being of similar constitution to the officinal citrate, and may therefore be obtained by a slight modification of the process necessary in this case. Mr. Jewell concluded his paper by observing that he thought the syrups of the hypophosphites were elegant preparations, and were among the best of the multitude of syrups chemists were obliged to keep.

After a short discussion, a vote of thanks was given to Mr. Jewell for his instructive paper, and to the Chairman for presiding.

JANUARY 12TH.

The annual dinner of the Association was held on the evening of this date, and was attended by about fifty of the members. Mr. Sands presided. An excellent dinner was provided, after which a number of speeches and songs followed, the evening passing in a most rapid and enjoyable manner.

CHEMICAL SOCIETY.

December 15th.

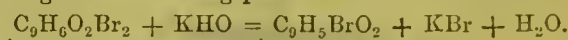
PROFESSOR FRANKLAND, F.R.S., Vice-President, in the chair. The following gentlemen were elected Fellows:—Messrs. P. F. Atkinson, R. Koma, and J. F. Stark.

Mr. PERKIN, F.R.S., read a paper on "Some new Derivatives of Coumarin." The author succeeded in obtaining the following new bodies:—

Dibromide of Coumarin . . .	$C_9H_6O_2Br_2$
Dichloride of Coumarin . . .	$C_9H_6O_2Cl_2$
α Bromocoumarin . . .	$C_9H_5BrO_2$
β Do. . .	
α Chlorocoumarin . . .	$C_9H_5ClO_2$
β Do. . .	
α Dibromocoumarin . . .	$C_9H_5Br_2O_2$
β Do. . .	
Tetrachlorocoumarin . . .	$C_9H_2Cl_4O_2$
Coumarilic acid . . .	$C_9H_6O_3$
Bromocoumarilic acid . . .	$C_9H_5BrO_3$
Sulphocoumarilic acid . . .	$C_9H_6O_2SO_3$
Disulphocoumarilic acid . . .	$C_9H_6O_2S_2O_3$

DIBROMIDE OF COUMARIN.—A solution of coumarin in carbon disulphide is mixed with a similar solution of bromine; and the mixture, after leaving it to stand for twelve hours, allowed to evaporate spontaneously. When dibromide of coumarin is treated with an alcoholic solution of potassic iodide it becomes brown, and on evaporation deposits needles, apparently consisting of a mixture of iodine and coumarin crystals, α bromocoumarin.

A simple process for the preparation of bromocoumarin is to decompose the dibromide of coumarin with alkalis, the following reaction taking place:—



Dibromide of carbon.

Bromocoumarin.

α Bromocoumarin, when left in contact with cold alcoholic ammonia, decomposes with formation of ammoniac bromide and a non-crystalline sticky mass, easily soluble in water. Heated with potassic hydrate it yields potassic bromide and a new acid.

α **DIBROMOCOUMARIN.**—On a previous occasion Mr. Perkin prepared this body by heating, in a sealed tube to $140^\circ C$, a mixture of one part of coumarin, two parts of bromine, and four or five parts of disulphide of carbon. He since found, however, that this process is greatly improved by the addition of iodine to the mixture, as it is then only necessary to heat the sealed tube for four or five hours in a bath of salt and water to complete the reaction. The fusing point of this substance is $183^\circ C$, and not $174^\circ C$, as had been previously given.

β **BROMOCOUMARIN.**—The hydride of sodium bromosalicyl, when submitted to the action of acetic anhydride, yields a quantity of hydride of bromosalicyl, and a body which, when crystallized from alcohol, yields colourless flat prisms, the analysis of which showed it to be monobromocoumarin, $C_9H_5BrO_2$. It greatly differs in properties from the bromocoumarin previously described, its fusing point being $160^\circ C$, or 50° higher; and when boiled with alcoholic or aqueous potassic hydrate it does not decompose with formation of potassic bromide, but simply dissolves like ordinary coumarin.

β **DIBROMOCOUMARIN.**—On heating the hydride of sodium dibromosalicyl with acetic anhydride, in exactly the same manner as for the preparation of β bromocoumarin, a beautifully crystalline product is obtained of the composition $C_9H_4Br_2O_2$. It is not the same body as that obtained by acting on coumarin with bromine and iodine. It fuses at $176^\circ C$, and is not decomposed by boiling with a solution of potassic hydrate. Mr. Perkin has therefore designated it as β dibromocoumarin.

DICHLORIDE OF COUMARIN.—A solution of coumarin in chloroform absorbs chlorine gas, only minute quantities of hydrochloric acid being formed. On allowing the solution to evaporate spontaneously after the chlorine has been passed through it for an hour or two, a syrupy product is obtained very like new honey. This is the dichloride of coumarin. From its products of decomposition there can be no doubt that it possesses the formula $C_9H_4O_2Cl_2$.

α CHLOROCOUMARIN.—A mixture of one part of coumarin and three parts of pentachloride of phosphorus, when mixed and heated in a retort placed in an oil bath, slowly react upon each other as the temperature rises, and when the oil has reached about 200° C., the product becomes a dark brown liquid. During this reaction a volatile liquid, consisting chiefly of bichloride of phosphorus, distills over. The contents of the retort, after treatment with water, become a pasty mass of crystals, which is first purified by distillation, and then by several crystallizations from alcohol. Its analysis gave the formula $C_9H_5ClO_2$. It fuses at 122° to 123° C., and, when heated, possesses an agreeable aromatic odour.

TETRACHLOROCOUMARIN.—Chlorine gas, when passed through a solution of coumarin and iodine in tetrachloride of carbon, is rapidly absorbed, hydrochloric acid being evolved; if the gas be passed for two or three hours a quantity of a reddish body separates; on evaporating the product, so as to separate the tetrachloride of carbon, an oily residue is obtained, the red substance having fused with the impurities. On mixing this with alcohol it soon becomes a white paste. On pressing this in a small linen bag a white product is obtained, which is further purified by being several times crystallized from spirit. The numbers of the analysis lead to the formula $C_9H_2Cl_4O_2$. It fuses at 144° to 145° C.

COUMARILIC ACID.— α Bromocoumarin, when boiled with a solution of potassic hydrate, decomposes, yielding potassic bromide and the salt of a new acid, which has the formula $C_9H_5O_3$. Mr. Perkin proposes to call it coumarilic acid. It fuses at 192° to 193° C., distills with partial decomposition, but sublimes undecomposed when gently heated. It is monobasic, and forms well-defined salts with the alkalies, the alkaline earths, lead, silver, mercury, and iron.

BROMOCOUMARILIC ACID.—It is prepared like the above, but substituting α dibromocoumarin for bromocoumarin. It possesses the formula $C_9H_5BrO_3$, and fuses at 250° C.

SULPHOCOUMARILIC ACID.—It is obtained on digesting a mixture of about one part of coumarin and five parts of fuming sulphuric acid in the water bath for an hour or two. From the analysis of its salts the formula of this acid when anhydrous is $C_9H_5O_3SO_3$. Mr. Perkin has prepared ammoniac, potassic, sodic, baric, and strontic sulphocoumarilates.

DISULPHOCOUMARILIC ACID.—On heating a mixture of about eight parts of fuming sulphuric acid and one part of coumarin to a temperature of 150° or 160° C. for an hour or two, the product will contain two sulpho-acids, viz., sulphocoumarilic acid and disulphocoumarilic acid. Its barium salt has the formula $C_9H_4O_2Ba^2SO_3$.

The next communication was by Dr. DEBUS, on the "Formula of Glyoxylic Acid." Dr. Debus showed that this acid ought to be written $C_2H_2O_3$, and not $C_2H_4O_4$. He considers it in reality to be the aldehyde of oxalic acid. Among other reasons for this view he quoted its behaviour towards the bisulphites.

Dr. ODLING was of the same opinion. He sees the aldehydic character of glyoxylic acid in its property of combining with one atom of water or of ammonia or ethylic chloride, etc.

Mr. PERKIN defended the formula $C_2H_4O_4$, quoting, among other evidences for the correctness of his views, the behaviour of glyoxylic acid when treated with phosphoric pentachloride; instead of losing water, and being converted into CO, it takes up three atoms of bromine.

THE PROPOSED REGULATIONS RESPECTING THE STORAGE OF POISONS.

At a meeting of the Pharmaceutical Council held on Dec. 7, 1870, the Sale and Keeping of Poisons Committee presented their report. They had drawn up the following set of regulations, and we also append the discussion that ensued thereon:—

1. In the keeping of poisons, each poison shall be kept in a box, bottle, vessel, or package, and labelled, in addition to the name of the article with some distinctive mark indicating that it is poison.

2. In the keeping of poisons, all, or any, or one of the following systems shall also be used:—

I. The boxes, bottles, vessels, or packages, containing poison shall be kept in an apartment, cupboard, compartment, or drawer, set apart for dangerous articles.

Or if not so kept apart.

II. The bottles or vessels, used in any shop or dispensary to contain poison shall be distinguishable to the touch, and shall be unlike the bottles or vessels used to contain articles which are *not* poisonous or dangerous, in the same shop or dispensary.

Or otherwise.

III. The bottles or vessels used in any shop or dispensary to contain poison shall be tied over, capped, locked, or secured in a manner distinguishable from the way in which ordinary articles are kept.

Moved by Mr. Dymond, seconded by Mr. Abraham—"That the report and recommendations of the Sale and Keeping of Poisons Committee as to the regulations to be proposed to the annual meeting be received and adopted."

Amendment—Moved by Mr. Brown, seconded by Mr. Woolley—"That as the law already provides for the punishment of carelessness and prescribes due labelling, it is undesirable to issue regulations for the keeping and dispensing of poisons, as no evidence has been adduced showing that regulations are necessary, the large majority of chemists already observing all needful precautions, and considering the provisions for improved education and increased responsibility, they ought not to be subjected to any further restrictions, unless it may be considered desirable in the interests of the public to apply the same to all dispensers of medicine, including surgeons, etc., naval, military and hospital dispensers and others."

For the Amendment—Messrs. Brown, Bottle, Savage and Woolley.

Against—Messrs. Abraham, Bourdas, Deane, Dymond, Edwards, Groves, Haselden, Hills, Sandford and Stoddart.

The amendment being lost, a further amendment was moved by Mr. Woolley, seconded by Mr. Brown—"That before adopting any regulations for the keeping of poisons it is desirable to have an expression of opinion from chemists throughout the country, irrespective of the decision of the annual meeting, and that circulars be issued asking if such regulations are desirable or not; one month to be allowed for reply, and the result considered at the February meeting of Council."

For the amendment—Messrs. Brown and Woolley.

Against—Messrs. Abraham, Bourdas, Deane, Dymond, Edwards, Groves, Haselden, Hills, Sandford and Stoddart.

Messrs. Bottle and Savage did not vote.

The amendment again being lost, the original motion was put as a substantive motion, and the following division took place:—

For the motion—Messrs. Abraham, Bourdas, Deane, Dymond, Edwards, Groves, Haselden, Hills, Sandford and Stoddart.

Against—Messrs. Bottle, Brown, Savage and Woolley.

The motion was therefore carried.

IMPROVED METHOD OF PRODUCING HYDROGEN GAS.

MM. TESSIÉ DU MOTAY and MARÉCHAL, who have lately discovered a mode of obtaining cheap oxygen for illuminating and medical purposes from the manganates of soda, have sought a more practical and economical method of producing hydrogen by the decomposition of water by means of carbon, and they have discovered the following method, which has given the most extraordinary results:—Alkaline and earthy alkaline hydrates, such as the hydrate of potash, soda, strontium, baryta, chalk, etc., mixed with charcoal, coke, anthracite, pit-coal, peat, etc., and heated to a red heat, are decomposed into carbonic acid and hydrogen, without further loss of heat than that due to the production of the carbonic acid and hydrogen. The hydrates of potash, soda, etc., and more especially the hydrates of chalk or lime, decomposed by the coal into hydrogen and carbonic acid, can be used indefinitely in this process, provided they are moistened each time with water, so as to reproduce the decomposed hydrates. In this operation, the hydrogen gas is generated without any special production of steam, and

may thus be produced without any other generating apparatus than the retorts themselves. These retorts, not being exposed to the direct action of the steam, are not subject to any interior alteration or damage. It follows, therefore, that the hydrogen gas produced by the decomposition of the above-named hydrates by means of carbon can be generated at a very small cost, and with the same facility as carburetted hydrogens from the distillation of pit-coal or other organic hydrocarbon matter. These alkaline and earthy alkaline hydrates may be mixed with the different mineral or vegetable combustibles, either in a definite chemical proportion, or without a fixed or determinate proportion, and in any suitable distilling or heating apparatus, in order to produce, when heated to a red heat, hydrogen gas for illuminating and heating purposes. The advantage of the production of hydrogen as cheaply as oxygen, which as been obtained, is likely to create a revolution in many industries, and especially in metallurgy. A cheap method of producing a great heat in order to reduce metals, such as platinum, gold, silver, and iron, has long been sought for in Europe, where the oxyhydric blowpipe is now used to melt the platinum in a calcium crucible. By this discovery it becomes possible to obtain an immense heat which could be regulated by a simple tap. Enamellers and porcelain makers may thus get rid of one of their greatest troubles.—*Journal of Society of Arts.*

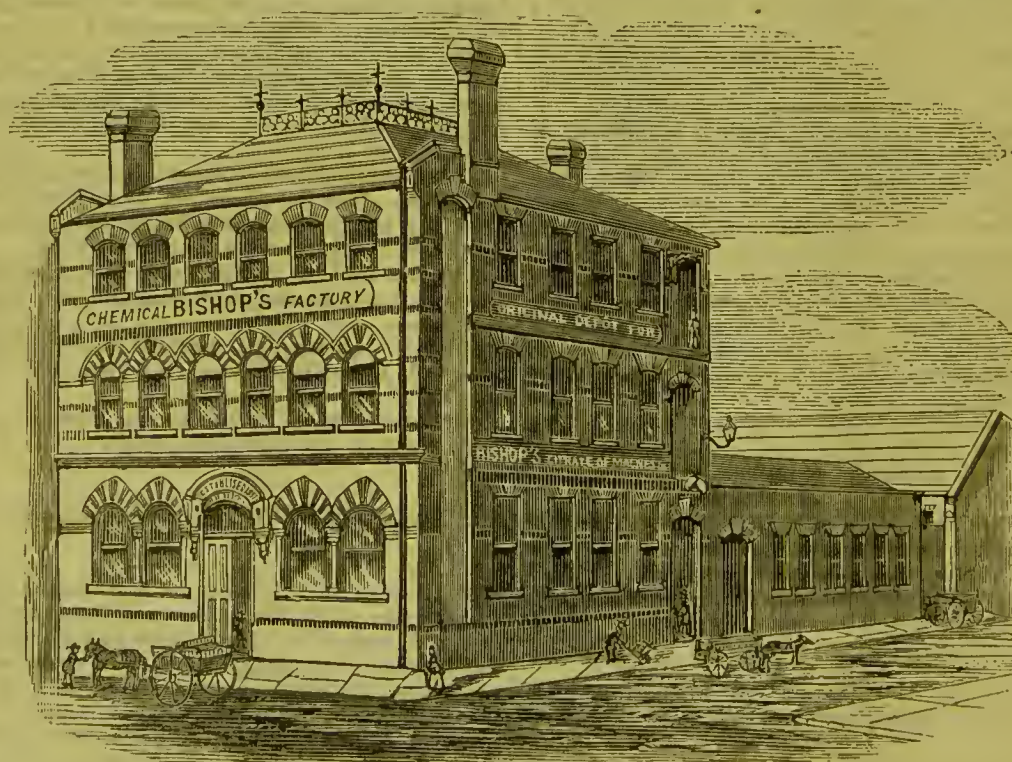
CITRATE OF MAGNESIA.

WHATEVER "conscientious pharmacists" may think of citrate of magnesia, there is no question as to the manner in which the public regard it. The handsome building of which we have much pleasure in presenting a view, is founded not exactly on sand, but on citrate of magnesia. Our readers are well aware that Mr. Bishop was the inventor of these granular effervescent preparations, and although many other chemists have competed with him since, his manu-

when he first experimented. His business has grown so rapidly, that he pulled down his old premises and erected works, offices, and warehouses on the same ground, these having been completed only last year. We hope that however much some of our friends may abuse citrate of magnesia, they will all join with us in congratulating Mr. Bishop on his success, and wishing him many prosperous new years.

THE NEW STAMP ACT.

THE Stamp Act which has just come into operation is an Act of consolidation, but also of amendment of the law. The scale of duties has in some cases been readjusted, making it press less heavily on transactions of small amount, and carrying it up *ad infinitum*, instead of stopping at a fixed maximum. The penny duty on letters of allotment is extended to loans raised by corporations. The penny duty on a proxy paper is defined to cover a paper authorizing "one" person to vote; it has been thought that a penny stamp ought not to suffice for the authorization of one person, and in his absence a second, and a third in the absence of both. The proposed stamp on coupons was abandoned, and, to remove doubts, they are expressly exempted from liability to bill of exchange duty. The scope of the charge on contract notes has been to some extent enlarged by a definition of stock and marketable securities. The term "warrant for goods" is substituted for "dock warrants," as the duty is not confined to goods in what is commonly called a dock, but extends to goods lying in warehouse. When a bill is drawn in a set, if one of the set is duly stamped, the others are to be exempt; and on proof of the loss of the stamped bill, another of the set may be used as evidence, though unstamped. It is now made a general rule that an instrument stamped with an adhesive stamp is not to be deemed duly stamped, unless the person bound to cancel the stamp writes on it his name or initials with the



factures still maintain their high position in every market in the world. We remark on this because it is a proof that the bestowal of constant care and attention for the sake of supplying the best possible article does not go unrewarded by a public who, nevertheless, knows nothing of what is being done. From our own acquaintance with Mr. Bishop, we can say that in the manipulations of his laboratory, although he has now to do with hundredweights and tons instead of ounces and pounds, he still devotes as scrupulous attention to the minutest particulars of his work as he did

date, or unless it is otherwise proved that the stamp was affixed at the proper time; but the holder of a foreign bill of exchange with an uncanceled stamp may himself cancel it. A duty of 10s. is imposed on the appointment of a new trustee. An instrument of apprenticeship is defined to include an instrument relating to the service "or tuition" of an apprentice, clerk, or servant; it has been found that instruments have frequently been framed so as to escape the duty by showing a contract by the master to teach, but no contract by the apprentice or clerk to serve. The

10s. duty chargeable in Ireland on what is called a negative search of a register is abandoned as quite exceptional, and not supported by any principle. Bankers' accountable receipts, to be exempt from duty, must now express that the money is received of the person to whom the same is to be accounted for. The present Act repeals the exemption from duty of transfers by indorsement of bonds and mortgages given by public companies under special Acts of Parliament as securities for money borrowed by the companies, and upon which four times the amount of the *ad valorem* duty has been paid. An adhesive stamp may be used on short lettings (less than a year) of furnished houses or apartments, or of houses at a rent not exceeding the rate of £10 a year. There are other new provisions, such as those relating to stamps on conveyances in consideration of rent-charges, grants of copyholds, certain leases, &c., but they are of more interest to the profession than to the general public.

GOSSIP.

A COMMERCIAL TRAVELLER, named Blenkin, employed by Messrs. Richards, Newborn, and Johnson, starch manufacturers, of Hull, committed suicide at Cambridge on Sunday morning. The unfortunate man arrived at Cambridge on business on Saturday morning, and was evidently unwell. He, however, transacted his business and retired early to rest at Webb's coffee-house, Market-street. He ate nothing all day, and after he went to bed he was attacked with delirium tremens. The proprietor of the coffee-house went to him, and stayed with him for some time, leaving him when he appeared to be quiet and composed. At about 8 o'clock the deceased got out of bed and attempted to cut his throat with a penknife, but after hacking himself about he chose a more speedy means of exit from the world. He occupied the front bedroom of the highest—the fourth—story in the house, and with nothing on but his shirt he opened the window and precipitated himself to the ground. He was immediately picked up and placed on a stretcher and conveyed to Addenbrooke's Hospital. Life became extinct almost immediately after his arrival at the hospital. He was supposed to be about forty years of age, and to be a married man with a family. He was formerly a chemist in business for himself at Hull; and was the original proprietor of the well-known patent medicine, "Blenkin's Pills."

The case of *Edmunds v. Edmunds* came before the Divorce Court on Wednesday. The husband in this case is a chemist, and he married the petitioner at Gloucester in 1854. In 1866 he deserted her at Birmingham, and he had now been guilty of adultery. Decree *nisi*, with costs.

Mr. Geo. Manby, of 112, High-street, Southampton, has retired from business, and is succeeded by his son, Mr. Walter E. Manby.

The old-established shop, carried on for over fifty-six years at Yarmouth, by Mr. Bond, is closed, and the business given up; the proprietor retiring from business.

Mr. Hall, late of Croydon (formerly of Penge), is about to open a handsome shop at Lowestoft, Suffolk.

Provincial and Foreign Reports.

[We shall be glad to receive from all parts of the world items of interest to our readers. Correspondents who favour us with reports of local meetings, etc., will please to condense them as much as possible; and when local newspapers are sent, we shall be glad to have the passage intended for our notice specially marked.]

GLASGOW.

GLASGOW CHEMISTS' AND DRUGGISTS' ASSOCIATION.
SESSION 1870-71.

THE members of this Association inaugurated their connection with Anderson's University on the evening of Wednesday, Dec. 7th, 1870, the President, Mr. Thomas

Davison, in the chair. There was a large attendance. After the ordinary business had been transacted, Mr. W. R. Kermath submitted the motion, of which he had previously given notice, regarding the adoption of a dispensing price list. The motion was seconded by Mr. David P. Walker, and agreed to. The following gentlemen were afterwards elected a Committee, with full powers to compile a price list in accordance with the motion—viz., Messrs. Davison, Brodie, John McMillan, Kermath, Nicol, Fenwick, Dun White, Galbraith, Johnstone, and Secretary, *ex officio*. A new code of rules were afterwards considered and agreed upon.

Notice having been given of a motion for next meeting, the proceedings terminated.

FIFTH MEETING.

The fifth meeting of the session was held in Anderson's University, on Wednesday evening, 14th Dec. last, the President in the chair. After the usual business, Professor Hennedy delivered the second of his course of lectures on "The Histology of Plants," which, being illustrated by drawings, etc., was of a most interesting and instructive nature. After the lecture, the following gentlemen were unanimously elected honorary members of the Association—viz., Dr. A. M. Robertson, Dr. R. Carter Moffat, Jas. McDonald, Esq., James Taylor, Esq., Robt. R. Hatrick, Esq., and Roger Hennedy, Esq. This being all the business, the meeting separated.

SIXTH MEETING.

The sixth meeting of the session was held in the usual place, on the 21st Dec. last. In the absence of the President, Mr. Brodie, Vice-President, occupied the chair. The minutes of the previous meeting having been read and approved of, Mr. Joseph Duncan, pharmaceutical chemist, was duly elected a member of the Association. The Chairman then introduced Mr. Jas. L. Macmillan, who read a paper on "Volumetrical Analyses," which he treated in a very elaborate and painstaking manner, both by experiments and illustrations on the blackboard, having tested a small quantity of oxalic acid, liq. potassæ, and lime juice, etc., on the spot. In concluding his remarks, Mr. Macmillan urged upon every member of the profession to study and practise analyses for themselves, that they might be able to detect the unprincipled dealer, and satisfy not only themselves, but their customers, of the purity of their goods. In the course of a short discussion which followed, Dr. Moffat recommended Sutton's work on Volumetric Analyses as being less complicated than the process in the British Pharmacopœia, and better suited, not only to the amateur analyst, but for all practical purposes in the laboratory. The Chairman complimented Mr. Macmillan on the interesting manner in which he had delivered his paper, and proposed a special vote of thanks for the instruction conveyed, which was heartily responded to by the members. The Secretary then read letters he had received from Robt. R. Hatrick, Esq., and Dr. A. M. Robertson, in acknowledgment of having been elected honorary members of the Association. Dr. Moffat also acknowledged the compliment that had been paid him in this respect. This concluded the business of the evening.

MANCHESTER.

MANCHESTER CHEMISTS' AND DRUGGISTS' ASSOCIATION.

THE third ordinary monthly meeting of the session was held in the Memorial Hall, Albert-square, on Friday evening, January 6th. The President, Mr. W. S. BROWN, in the chair.

The following donations to the Library were acknowledged:—The *Pharmaceutical Journal*, weekly from the Society; the *Pharmacist*, from the Chicago College of Pharmacy, U. S.; Dr. Thorpe's "Chemical Problems," from the author.

Mr. LOUIS SIEBOLD, Lecturer on Pharmacy, in Owen's College, delivered a very interesting lecture on the subject of "Pharmaceutical Examinations," criticising the method adopted by the Pharmaceutical Society, and pointing out what he considered to be practically defective.

A resolution was passed, "That Mr. Siebold be requested to prepare his address for publication in a substantial form."

A paper "On the Importance of some Knowledge of Anatomy and Physiology to the Pharmacist," by Mr. ROBERT HAMPSON, was announced for the February meeting.

NOTTINGHAM.

NOTTINGHAM AND NOTTINGHAMSHIRE CHEMISTS' ASSOCIATION.

THE second general meeting of this Society was held on Friday evening, Nov. 11th, the President, Mr. AMERTON, in the chair.

Various donations to the Library and Museum were announced, and a voto of thanks accorded to the respective donors.

Five new Associates were proposed, after which Mr. MAYFIELD read his Introductory Address to the students of the Pharmacy and Materia Medica Class.

The third general meeting of the Association was held in the rooms of the Society on Friday evening, the 16th December, the chair being filled by Mr. FITZHUGH, the Vice-President. Members only were invited, many of whom were present.

The election of the five candidates proposed at the last meeting was unanimously carried.

Mr. W. H. PARKER proposed certain suggestions for the immediate formation of a Museum, which was at once agreed to by the following gentlemen undertaking to supply specimens as under:—Barks, Mr. FitzHugh; Seeds and Fruits, Mr. W. H. Parker; Leaves, Mr. White; Gums and Gum Resin, Mr. Mayfield; some dried specimens, M. J. T. Jenkins. Afterwards, Mr. Potles exhibited and explained various pharmaceutical novelties.

TORONTO, CANADA.

WHAT IS A DEADLY POISON?

WHEN the last number of the *Canadian Pharmaceutical Journal* was issued, a decision was pending at the Toronto Police-court which would seriously affect nearly all the druggists of that city, and indeed all throughout the Dominion. There is, it appears, a law in Canada relating to the sale of poisons, from which the following is an extract:—"No apothecary, chemist, druggist, vendor of medicine, or other person shall sell or deliver any arsenic, corrosive sublimate, strychnine, or other poison, mineral or vegetable, simple or composite, commonly known as a deadly poison (or which being incautiously or secretly administered may cause immediate death), to any person who does not then produce and deliver a certificate or note from some person duly licensed to practise as a physician or surgeon, or some priest or minister of religion, resident in the locality, addressed to such druggist, etc., and mentioning the name, calling, or profession of the person requiring such poison; and stating the purpose for which it is required, and that it ought to be sold to the persons requiring the same; and such certificate or note shall be kept by the persons selling or delivering such poison as his justification for so doing."

A certain informer named Mason went round to all the drug stores of Toronto and succeeded in obtaining a small quantity of laudanum from twenty-five of them. He then instituted a prosecution against these, and the case of one was taken and occupied the attention of the magistrates for several days. The question for them to decide is, whether laudanum is or is not to be regarded as a deadly poison. A number of witnesses, including Professor Croft and Dr. Lizars, were examined, but all agreed in their testimony that laudanum could not be so regarded, and could not, with propriety, be classed in the same category with arsenic, corrosive sublimate, and strychnia.

On this subject our Canadian contemporary remarks:—"The druggist is the party with whom the responsibility of the sale of poisons should rest. The nature of his calling presupposes an intimate knowledge of their properties and uses; of these matters he is certainly a better judge than the priest or minister. His standing in the community is, as far as morality is concerned, as high as any. Care and watchfulness form an essential part of his education, and, in

this respect, he is not a whit behind the physician. We are not unduly sounding the praises of the class we represent, for we find that others entertain an equally high estimate of the character of the profession. On this subject a city contemporary editorially remarks: 'As a rule the educated druggist is one of the most careful of traders. A high sense of responsibility governs his proceedings, whether dispensing or retailing his goods. Not a few of them can point to occasions on which even the physician's prescription has been corrected, and a catastrophe arising from a slip of the M. D.'s pen, averted by the watchfulness and intelligence of the dispenser.' Let the druggist be allowed to use his own discretion in regard to the sale of poisons, and in thus assuming the guardianship of the public safety, we are sure that the welfare of the community will not suffer.

Fragments.

THE cultivation of ipecacuanha in India is proceeding satisfactorily.—Spider's web made up into pills is used in some tropical countries as a remedy against intermittent fevers. Dr. Donaldson in the East, and Sir James McGregor in the West Indies, report on its virtues in the highest terms.—The *American Chemist* says German beer bouquet consists of a solution of essential oil of lemons in light petroleum oil, and a coarse fusel oil containing spirits coloured by turmeric. German beer is nastier than we thought.—The Americans are the largest consumers of coffee, one-third of the entire produce of the world going to the United States. Next to China, Russia drinks the most tea, Great Britain coming next.—The average weight of a Scotchman is 155 pounds; of an Englishman, 145 pounds; of an Irishman, 138 pounds.—In a German scientific publication, Dr. G. A. Björklund gives a detailed account of the enormous wealth of the Russian Empire as regards inexhaustible sources of naphtha and ozokerite, which latter is actually obtained by mining and quarrying in large quantities, and applied to the manufacture of paraffine, and, in some instances, for the adulteration of beeswax.—There are 713,000,000 pounds of coffee produced and consumed annually.—Americans are manufacturing golden syrup with sulphuric acid and starch. It is said to blacken the teeth and chaw up the gizzard. From the same land of innocence we read of currant jelly being made out of old boots.—The sale of patent medicine stamps produced during the year 1869 the sum of 72,353l.

Trade Memoranda.

AMONG the exhibitors at the recent Exhibition, connected with the meeting of the American Pharmaceutical Association at Baltimore, we notice the name of Battley and Watts, who sent six samples of liquid extracts prepared in accordance with the British Pharmacopœia. This firm seems to have been the only representative of the United Kingdom.

The *Liverpool Journal of Commerce* states:—"Advices from Cincinnati mention the failure of Messrs. E. F. Suise and Co., one of the largest drug firms in the United States. The liabilities are stated to be 150,000 dollars. The assets are estimated at 312,000 dollars, if advantageously realized." If the figures given in this paragraph are correctly placed, and anything like correctly estimated, this failure is a curious one. A balance of more than £30,000 on the right side is a tolerably solvent condition for any firm.

PILLS BY THE MILLION.—The firm of Messrs. Cox, Son, and Co., of which the ex-Mayor of Brighton, Mr. Alderman Cox, is the head, received the other day a telegram from a West-End firm to know whether they could undertake the making of a million quinine pills within a fortnight—400,000 pills to be delivered in the first week and 600,000 in the second. Messrs. Cox undertook the work, and a large number of men were constantly employed from early morning till late at night, and we understand that the

contract was completed in eight days. Each pill contained a grain and a half of quinine, and nearly £1,000 worth of this drug was used, its value being calculated at the present market price 6s. per ounce. The order was evidently given for the sick and wounded in the war.



THE LOST FOUND!

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

DEAR SIR,—In your issue under date of November 15th, 1870, there appears from the editorial pen a paragraph which has proved rather amusing to many of your Canadian readers. It is in relation to a certain Mr. William Saunders, of London, whose appearance at the meeting of the American Pharmaceutical Association, at Baltimore, has in some way disturbed your editorial dreams.

In the impatience of your heart, at your inability to solve the problem as to who this party is and where he hails from, you say, "We ask with all respect who is Mr. William Saunders when he is at home? surely he has been rather too modest in London, or we should have heard of him before this. Neither does his name appear in the Pharmaceutical Register nor in the Directory."

To have one's name thus called over, reminds us of schoolboy days when the master called and we shouted "here." We would fain repeat the process now, but we fear the oral response would scarcely reach ears editorial, especially when the senses are so lost in the din and bustle of their immediate surroundings.

"Gentle editor," we sympathize with the impatient outburst of your innocent nature—for how could it be otherwise when an editor has to confess his ignorance on a point however trivial?—and our generous feelings prompt us to the rescue.

We do not suppose you have ever been across the Atlantic, so allow us to remind you of what you have doubtless learnt when young, that there is a vast country on the western shores of this mighty ocean, which rejoices now in the name of the Dominion of Canada. Proceed up the rivers and lakes of this great country and you will find city after city, some of them of no mean dimensions, but all small when compared with your own vast city at home. After passing over a region of fertile country, about twice the length of all England, you find yourself in one of the most productive districts of Ontario, and here in the very heart of this stands the thriving little city of London.

Pray don't be excited, we shall have you shouting "Eureka" before long, for here resides the veritable individual whose place of retreat has been such an enigma to your editorial pate. He is one of a number of respectable well-to-do druggists inhabiting this progressive place, and well known throughout the Dominion as a manufacturing pharmacist. He was also one of the principal exhibitors of pharmaceutical preparations at your own International Exhibition in 1862. He sends you his card with price-list of manufactures, also map of Canada, with the hope that you will study it carefully. Trusting that you will not again rush to the conclusion that it is impossible that anything relating to pharmacy, worthy of notice, can spring from any other London than "London the Great,"

Yours respectfully,

WILLIAM SAUNDERS.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

GENTLEMEN,—I observe in your issue of November 15th, a paragraph, on page 321, referring to a Mr. William Saunders, who had been a visitor at the meeting of the American Pharmaceutical Association held in Baltimore, in September last, and asking the query: Who is this Mr. William Saunders, when he is at home? You have quite mistaken the home of this gentleman, for you would look a long time in the streets of London, England, and also in the list of

the Pharmaceutical Society of Great Britain, to find him; for he is a gentleman residing in London, province of Ontario, in the Dominion of Canada, a chemist of considerable repute, and in that city of our Dominion, a manufacturer of *Materia Medica* Fluid Extracts, largely used in Canada, especially in the province of Ontario. Thinking it might be some satisfaction to you to know who this individual is, I have written this note.

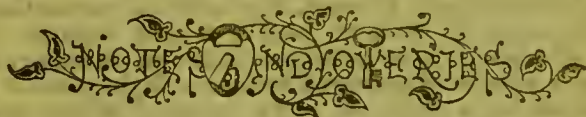
Yours respectfully,

E. MINS,

Montreal, December 7, 1870. Chemist and Druggist.

We shall never doubt the existence nor the importance of London, in Canada. We are quite certain that it contains at least one inhabitant who is worthy of our best esteem, and we wish long life and prosperity both to him and his city. But it will be desirable for one of the Londons to adopt some addition to its designation, as (Eng.) or (Ont.) when described in papers of cosmopolitan circulation, or both being rather important, we shall get some day into worse confusion.

While we are submitting to all this castigation for what, we must admit, was a rather too careless inquiry, we may as well accept also the editorial rebuke of the *Chicago Pharmacist*, which, extracting our query, thus comments on it:—"We cull the above from the editorial columns of our valuable contemporary, the *Chemist and Druggist*, and for its special information we will state we are personally acquainted with the 'too modest' but honoured member of the A. P. A. from the Queen's Dominion, whose connection with this organization dates back to the year 1860, he having, during this lapse of time, been a frequent attendant at, and contributor of original papers to, the 'Proceedings' of its sessions. This fact, with a retrospective glance at the pages of his own journal, should give our brother editor all the information he desires, for he will there find it recorded that Mr. Saunders was the only contributor to the last Paris Exposition of a large collection of American indigenous drugs. We will also state that when Mr. Saunders is 'at home' (London, Canada West), he is a 'success' as a horticulturist and entomologist as well as a pharmacist. We hope that our colleague of the *Chemist and Druggist* will not in future draw the line of demarcation by the interrogation, 'And have you seen London?'"



MR. F. C. SKEY writes to the Editor of the *Lancet* that a perfectly safe and effectual remedy for chilblains is obtainable in the employment of laudanum, taken internally in very small doses of from two drops for young children night and morning, up to six or eight for adults. It is in such quantities perfectly harmless, and, as a rule, will effect a cure in the course of four or five days.

JAPANESE FIREWORK MIXTURE.—Finely pulverised nitrate of potassa, 70 parts; washed flowers of sulphur, 30 parts; *pulveris lycopodii*, 12 parts; best and very light lamp-black, 8 parts. From 1½ to 2 grains of this powder are sufficient for use packed in strips of suitable paper.—*American Chemist*.

EAU DE BEAUTÉ.—Bichloride of mercury, 80 centigrms.; camphor, 1 grm.; sulphate of zinc and solution of lead, of each 4 grms.; rosewater, 250 grms.; and the yolk of one egg. This mixture is regularly in use by Creole ladies for beautifying their skin. A bottle containing this mixture in the above quantity is sold for about five shillings.

BROMAL HYDRATE.—Bromal hydrate is less known than chloral hydrate, but it seems not unlikely to come somewhat more in demand than it is at present. Messrs. E. W. Howo and Co. send us the following remarks upon it which, they state, they have received from the largest maker:—"Bromal hydrate, $C_2Br_3HO + 2H_2O$, with care, crystallizes in white needles, without care in large crystals resembling in size those of sulphate of copper. It has a taste and odour similar to chloral hydrate; is soluble in water and alcohol; and ought not to be precipitated by nitrate of silver. When

agitated with cold sulphuric acid, the bromal deposits itself in drops at the bottom of the vessel; and if heat is employed to this mixture, gas is evolved and bromine deposited. Experiments on animals show that it produces a more anæsthetic than hypnotic action. It is also believed to be a very powerful agent, and until the exact strength is ascertained should be used with caution.—We are, Sir, yours obediently, E. W. Howe and Co."

WE have some strange correspondents who have asked us sometimes for a recipe for the sticky fly-papers. We transcribe the following from a foreign exchange, which recommends sheets of the paper to be laid about the house. We should like to see anybody following that advice in our house:—Melt some rosin in an iron vessel and add to it as much sweet oil or lard oil as will make it of the consistence of molasses when cold; spread it with a brush on any rather stiff paper and it is ready for use.

We glean the following from the New York Druggists' Circular:—

SWEET TINCTURE OF RHUBARB.

Take of rhubarb, bruised,
Liquorice root, bruised, of each ... 2 ounces.
Anised, bruised,
Sugar, of each ... 1 ounce.
Diluted alcohol ... 2 pints.

Macerate for fourteen days, express and filter.

SOLUBLE BLUE is made by taking seven parts of oil of vitriol, placing it in a glass vessel, setting this in cold water, and adding gradually one part of fine indigo in powder, stirring the mixture at each addition with a glass rod. Cover the vessel for twenty-four hours, then dilute with an equal quantity of water.

RANCID BUTTER may be restored by melting it in a water-bath with some fresh-burnt and coarsely powdered animal charcoal (which has been thoroughly freed from dust by sifting), and straining it through clean flannel. A better and less troublesome method is to well wash the butter, first with good new milk, and next with cold spring water. Butyric acid, on the presence of which rancidity depends, is freely soluble in fresh milk.

We are indebted to the *Scientific American* and the *American Grocer* for some of the following paragraphs:—

MANUFACTURE OF CHAMPAGNE.—As the greater part of the champagne country has been overrun by the German army and the exportation of genuine wine can hardly take place for some time to come, the artificial production of this beverage is likely to receive a new impulse. For those who prefer to manufacture their own champagne we append a number of approved recipes:—Eight parts of the best West India sugar are to be dissolved in four quarts of distilled water, and boiled, and while still hot, two quarts of rectified spirits added. This affords what is called champagne liquor to serve as stock in the manufacture.—To prepare the Roedern brand, with green seal and bronze cap, take one portion of the above liquor, one anker white wine, one bottle cognac, and four drops of the oil of wine beer dissolved in cognac.—For Heidsieck, one portion liquor, one anker white wine, and half a quart cognac. Other varieties are prepared in a similar way, the chief difficulty being to provide the proper bottle, sealing-wax, and labels. In default of white wine, cider is found to answer every purpose, and glycerin can be substituted for sugar.

PROFESSOR LIEBIG tells a story about a chemical factory he visited in Scotland. The proprietor politely showed the eminent chemist through an establishment for making Prussian blue. The noise of the machinery was so great as to preclude conversation, and the iron scrapers in a revolving mill rubbed so hard against the sides of the hopper as to wear out the shafting in a few months. After the party had returned to the open air, Liebig inquired why it was that the friction was allowed to destroy the scrapers. "That is precisely the secret of my success," said the proprietor; "I find the more noise the machine makes, the finer is the quality of my product." The manufacturer actually introduced iron into the prussiate of potash at the expense of his machinery, and he was not a little astonished when Liebig advised him to throw in the iron in the form of scraps and thus accomplish the same results.

THE celebrated chemist, Dr. Dalton, thought the red gown in which he was installed as a Doctor of Civil Law at Oxford, was a blue one; he was colour-blind, could not tell when his blue stockings were exchanged for red ones; they simply seemed a little dirty, to his eye.

AN ELASTIC PREPARATION OF GLUE.—Dr. Sonnenschein reports (*Polytechnisches Journal*) that when a thick solution of glue is mixed with tungstate of soda and hydrochloric acid, there is precipitated a compound of tungstic acid and glue, which, at 30° to 40° C., is sufficiently elastic to admit of being drawn out into very thin sheets. On cooling, it becomes solid and brittle, but when heated, it again becomes soft and plastic. It appears that this material has been successfully employed instead of albumen in calico-printing, in order to fix the aniline colours upon cotton; it is also used in tanning, but the leather becomes as hard and stiff as a plank of wood. It is recommended as a lute or cement.

FELLOW TRAVELLERS.—"Will you help me out of this mud-hole?" asked one traveller, whose team was stuck fast in the mud, of another who was passing. "No, I can't stop," said the other. "I would take it as a great favour," said the man in trouble. "What are you loaded with?" asked the traveller. "Drugs and medicines," was the reply. "I guess I will try to help you out, then, as I am loaded with tombstones." They were constant companions afterward.

CEMENT FOR GLASS.—Dissolve 1 part of India-rubber in 64 parts of chloroform. Add 16 parts of gum mastic, in powder. Digest it for two or three days in a well-stoppered bottle frequently shaking it. Apply it to the edges of the glass with a camel-hair brush.

LIQUID GLUE.—Dissolve in 12 parts of water 11 parts of the best glue by a water bath. Then add 3 parts of nitric acid gradually.

IMPROVING CIDER.—Let the cider ferment for one or two weeks, depending on the temperature. When it is in brisk fermentation add to each gallon $\frac{1}{4}$ ounce of sulphite of lime, which should be dissolved in some cider taken from the cask. When perfectly dissolved return it to the cask and thoroughly mix them. When the cider has settled it may be drawn off into fresh barrels or be bottled. It will ferment very little more and may be drawn as wanted and appear as fresh cider; if bottled it will be sparkling.

PASTE BLACKING.—Take of ivory black, $1\frac{1}{2}$ lb.; molasses, 1 lb.; sweet oil, 2 oz. Rub together till a uniform paste is produced, and then add a little good vinegar till the proper consistence is obtained.

DETECTION OF THE ADULTERATION OF QUININE WITH SALICINE.—Dr. Stonelén has comparatively tested the degree of accuracy and sensitiveness of the different tests in use for the detection of the presence of salicine in quinine, which, if made with the view of fraudulent adulteration, will always be at least at the rate of 1 per cent. of salicine, or more, because less will not pay. He employed three kinds of sulphuric acid—viz., the fuming, pure concentrated acid, free from arsenic and nitric acid; ordinary concentrated sulphuric acid of commerce, containing a trace of nitric acid; and lastly, sulphuric acid, to which, purposely, nitric acid had been added. A watch-glass having been placed on a sheet of white paper, and a drop or two of the acids above referred to (each in a separate glass) having been poured therein, a few crystals of the alkaloid (sulphate of quinine) were put on the acid; if pure, there is no coloration, but, even with $\frac{1}{100}$ th of salicine, the three first-named acids caused a distinct red coloration, which did not ensue with the acid containing nitric acid. This latter acid was not even coloured by pure salicine.

TRANSPARENT POMADE.—The following has been furnished by a correspondent writing from Lexington, Kentucky:—"Inclosed please find a receipt for Transparent Pomade, which I have found to answer very well.

Take of Castor-oil ... 1 pound
Spermacei ... $\frac{1}{4}$ "
Perfume ... q. s. M.

"LEX."

OIL OF RHODIUM.—This oil is said to be derived from a species of *Rhodoriza*; very fluid and limpid; pale yellow; soon darkens by age and exposure; tastes bitter and aro-

matic; has a modified odour of roses. Chiefly used as a substitute for otto of roses in cheap perfumery, and to adulterate it. Oil of sandal-wood is frequently sold for it.

OIL OF TURPENTINE FOR PURIFYING PURPOSES.—However carefully the oil of turpentine may have been distilled, it always leaves after evaporation a disagreeable odour, firmly adhering to the goods that have been treated with it. The same is the case with benzine and the lighter petroleum oils. This may be obviated, according to Bremer, by distillation over tannin. Articles treated with oil of turpentine that has been distilled in this way, are heated to 150°, when they lose every trace of odour. Bremer adds, that this preparation is less inflammable, cheaper, and more agreeable to the workman than benzine,—(*French patent.*)

BLEACHING SPONGES.—White sponge is prepared commonly by soaking the common sponge in very dilute hydrochloric acid to remove the calcareous matter, then in cold water, changing it frequently, and squeezing the sponge out each time; it is then soaked in water holding a little sulphurous acid, or a very little chlorine in solution. Lastly, the sponge is washed in clean water and scented with rose or other fragrant water, and dried. Another way is to soak it in dilute hydrochloric acid for ten hours, then wash well with water and immerse in a solution of hyposulphite of soda, with a small addition of diluted hydrochloric acid, wash and dry. Be careful to use the acids not too strong.

Exchange Column.

THIS column is for the use of chemists and druggists who wish to obtain or dispose of surplus stock. It is intended to supply an opportunity for the transaction of that class of business which is generally described as "bargains." In order to pay expenses, a fee of one Halfpenny per word is charged, which must be paid in advance.

All correspondence respecting any of the articles mentioned below must be addressed to the Publisher of the CHEMIST AND DRUGGIST, Colonial-buildings, Cannon street, London, and on the envelope must be distinctly marked the figures attached to the advertisement. In no case must the same letter refer to more than one advertisement. All letters will be forwarded by the publisher to their proper destinations, and with that his share in the transaction will cease.

FOR DISPOSAL.

Fifteen *Pharmaceutical Journals*, July, 1866, to September, 1867. 9/. Twelve doz. 6 oz. Pomades. 60/. 21/310.

Air Cushion (Lyne and Hancock's), Registered, Seat and Back combined. Cost 50/. Offers wanted. 1/310.

Copper Hot Air Bath (Maw's). Offers wanted. 2/310.

Four Specie Jars (Maw's), nearly like Fig. 23, 23 in. high. Also four 2 gal. Carboys for window. Offer wanted. 6/310.

Pharmaceutical Journal, 1852 to 1868, complete, clean, unbound. Offer wanted. Also, *Chemist and Druggist* from commencement. 23/310.

Mahogany top Counter, 12 ft. long; Plate-glass Counter Case, 5 ft. In first-rate condition. 17/310.

Electrical Machine, 14 in. plate, with Apparatus. 18/310.

Case of Post-mortem Instruments, £2 2s.; Case of Amputating Instruments, £3 3s. Equal to new. 19/310.

Thirty dozen Hair Brushes, slightly soiled. May be seen in London. 28/310.

Four 3 gal. Pear-shape Carboys. Weight, 36 lbs. Take 8d. per lb. 9/310.

One-sixth doz. each Hall's Lung Restorer at 27/ and 10/6; Hall's Health Renewers, at 10/6 In exchange for same value of Winslow's Syrup. 7/310.

Three Tin Oil Cisterns. Capacity of each, 70 gals. Quite sound. Will take 20/ each. Also Buckle's Leech Jar, for 2/6. Six quart size. 25/310.

Attfield's "Chemistry." Quite new.

Royle's "Materia Medica." 5th edition. Quite new.

Owen's "Conspicuous." 2nd edition. Quite new.

Lindley's "School Botany."

Thirteen Nos. *Pharmaceutical Journal*, from April, 1869, to April, 1870, both inclusive. 26/310.

Davy (new), "On the more Important Diseases of the Army," 15/. Take 5/6. 14/310.

Bousingault's (new) "Rural Economy in Relation with Chemistry," 18/. Take 7/6. 15/310.

Six doz. 1/9 Devine's Hair Restorer; 2 doz. 3/6 Ross's Great Hair Restorer; 2 doz. 3/6 Ross's Hair Curling Fluid; 12 doz. 1/1½ Woodcock's Wird Pills; 12 doz. 1/1½ Henry's Nervine; 1 doz. 3/6 Ross's Depilatory; 1 doz. 3/6 Ross's Cantharadine Oil. All new stock. Cash, or exchanged offers for part or whole of above invited. 27/310.

Exchange.—Pair handsome Show Jars, as Fig. 1, Maw's List, 24 in.; Mahogany Square Stands, for Show Case, bent plate glass. Or offers, or sale. 11/310.

WANTED.

Grey's "Anatomy." State price. 3/310.

A small Glass Still. 4/310.

One or two small Percolators, York Glass Co. 5/310.

Second-hand Nitrous Oxide Inhaling Apparatus. Edwards's preferred. 20/310.

"Selectæ Prescriptis," and Mohr and Redwood's "Practical Pharmacy." Send price and state condition. 16/310.

Gray's Supplement. Send price and state condition 8/310.

Soda Water Machine, in good condition, complete. Send particulars. 12/310.

Stoppered Stock Bottles, 2 oz.—40 oz. Send particulars. 13/310.



[The following list has been compiled expressly for the CHEMIST AND DRUGGIST, by L. de Fontainemoreau, Patent Agent, 4, South-street, Finsbury, London; 10, Rue de la Fidélité, Paris; and 33, Rue des Minimes, Brussels.]

Provisional Protection for six months has been granted for the following:—

2999. J. H. Spence, of Marylebone. An improved apparatus for a deodorizer for waterclosets. Dated 16th November, 1870.

3014. C. F. Bower, of Perth-road, Stroud Green-road. Improved apparatus for the use of invalids. Dated 17th November, 1870.

3020. J. Galletly and W. Melvor, both of Addiewell, Midlothian. Improvements in treating hydrocarbons and other oils, and in the machinery or apparatus employed therefor. Dated 18th November, 1870.

3027. R. P. Wilson, of Regent's Park. Improvements in means for testing or measuring the quality or colour of oils and other liquids. Dated 18th November, 1870.

3042. A. C. Tupper, of Westminster. Improvements in the manufacture of lint for surgical, medical, and other purposes. Dated 21st November, 1870.

3047. J. Hargreaves, of Appleton-within-Widnes, and T. Robinson, of Widnes, Lancaster. Improvements in apparatus employed or used in the manufacture of sulphates of soda and potassa. Dated 21st November, 1870.

3056. A. H. Watkins, of Nailsworth, Gloucester. An improved respirator to be used in confined positions rendered unhealthy from the presence of noxious gases or effluvia. Dated 22nd November, 1870.

3070. H. Codd, of Park Place, Caledonian-road. Improvements in bottles, and in the mode of stopping or closing the same. Dated 24th November, 1870.

3074. W. L. Joy, of Leeds. Improvements in the method of charging oil seed presses and the apparatus and envelopes therein employed. Dated 24th November, 1870.

3093. H. Larkin, of Thoydon Gernon, Essex, and W. White, of Hampstead. Improvements in the manufacture of chlorine. Dated 25th November, 1870.

3098. S. Desborough, of Clerkenwell. Improvements in the manufacture of soap and in chemical compounds applicable to the cure of skin diseases. Dated 25th November, 1870.

3105. W. G. Gard, of Breaston, Derby. An improved mixture for preserving meat, fish, poultry, game, cheese, and other animal substances. Dated 26th November, 1870.

3167. F. Hillé, of Brentford, Middlesex. Improvements in the manufacture of deodorizing and disinfecting compounds and in the treatment of sewage and impure waters and in closets and apparatus for the treatment of sewage. Dated 2nd December, 1870.

3169. H. Y. D. Scott, of Ealing, Middlesex. Improvements in the treatment of sewage and in the preparation of materials to be used for its purification. Dated 2nd December, 1870.

3208. P. Spence, of Newton Heath, Manchester. Improvements in the manufacture of prussiate of potash and prussian blue. Dated 6th December, 1870.

3250. J. C. Mewburn, of London. Treating lichens or moss in order to obtain sugar or saccharine matter and spirit therefrom. Dated 12th December, 1870.
3262. A. Ford, of Elgin Crescent. An improved method of applying moisture and heat medicated or otherwise to the animal frame. Dated 13th December, 1870.
3274. W. R. Lake, of London. An improved process of eliminating the colouring matter of garancine and other products of madder. Dated 14th December, 1870.

Letters Patent have been issued for the following:—

1700. R. Blackbee, of Dalston. Improvements in the construction of surgical instruments known as "speculi." Dated 14th June, 1870.
1710. F. Dupuy, of Bayonne, France. An improved anti-hæmorrhoidal apparatus or anti-hæmorrhoidal plate. Dated 15th June, 1870.
1749. A. S. Stocker, of Horsleydown, Surrey. Improvements in bottles and stoppers and other articles to be employed therewith, some of which are applicable to other purposes, and the manufacture thereof. Dated 18th June, 1870.
1801. S. F. Van Choate, of Boston, Mass., U.S. Improvements in distilling alcoholic liquors. Dated 24th June, 1870.
1800. G. Thomson, of Glasgow. Improvements in treating manganese, ores, oxides, or salts, and in making ferro-manganese. Dated 25th June, 1870.
1845. H. Medlock, of Tavistock Square. An improved method of and apparatus for separating aqueous from oleaginous substances. Dated 28th June, 1870.
1563. R. Plunkney, of Bread Street-hill. Improvements in the production of colours from aniline in dyeing and printing. Dated 30th June, 1870.
1942. W. G. Jackson, of Dockhead, Surrey. Certain improvements in the manufacture of cordials. Dated 5th July, 1870.
2065. J. H. Johnson, of London. Improvements in the production of sulphuric and hydrochloric acids, of carbonates of potash and soda, and also of chlorine. Dated 21st July, 1870.
2122. E. Vignier, of Great Tower-street. Improvements in distilling and rectifying, and in apparatus employed therefor. Dated 28th July, 1870.
2303. C. Morfit, of Sudbrook Park, Surrey. Improvements in the manufacture of superphosphate of lime. Dated 20th August, 1870.
2312. S. Darby, of Leadeuhall-street. Improvements in the manufacture of fluid meat. Dated 22nd August, 1870.
2594. H. C. Carver, of Bagillt, Flint. Improvements in machinery and arrangements for separating mixed substances or materials of different specific gravities. Dated 30th September, 1870.
2642. A. V. Newton, of London. Improvements in the working of galvanic batteries. Dated 5th October, 1870.
2732. W. R. Lake, of London. Improvements in the manufacture of oil and other products of petroleum. Dated 20th October, 1870.

Specifications published during the month. Postage 1d. each extra:—
1870.

1006. I. Baggs. Carbonates of ammonia. 4d.
1055. L. Weber. Galvanic cells and batteries. 8d.
1122. J. Barrow. Treating naphthalene, etc. 4d.
1124. J. Townsend. Applying heat in chemical operations, etc. 10d.
1142. H. W. Hammond. Superphosphate of lime. 4d.
1160. R. F. Bigot. Combined bung and vent. 6d.
1176. W. Gossage. Decomposing metallic sulphides. 4d.
1183. C. H. Savory and W. R. Barker. Apparatus for fumigation, vaporization, and inhalation. 4d.
1186. F. Spence. Prussiate of potash and soda, and Russian blue. 4d.
1213. F. J. Ortnier. Pipes for drawing liquids from casks, etc. 6d.
1218. J. Underwood. Stopping bottles, etc. 8d.
1233. F. Ransome. Artificial stone, vessels for acids, etc. 4d.
1300. E. T. Kirkpatrick. Producing oxygen gas. 4d.
1312. L. Mond and J. Hargreaves. Manufacture of chlorine. 4d.
1350. F. Perry and J. I. Bengough. Preserving meat. 4d.
1354. G. W. Wigner. Deodorizing and purifying sewage, etc. 4d.
1371. J. Heddle. Preparing vegetable juices, etc. 4d.
1425. J. Casthelaz. Artificial alkaloids, &c. 4d.
2101. W. R. Lake. Collodion. 4d.
2544. G. T. Bouefield. Hydrocarbon oils. 4d.



THE *Times*, in remarking on the year's trade, commented on the singular steadiness of English commerce during the past year. It is certainly not a little remarkable, and proves how safely business has been conducted on the whole since the never-to-be-forgotten days of 1866; that although some fifty millions of our regular customers have been too much engaged in a frightful war to carry on with us their usual transactions, and although we have ourselves been from time to time disturbed by rumours of war, and once, at least, by its apparent closeness, yet there has been nothing like a panic, and we close our books for the year with a satisfactory and an improving balance-sheet.

On the whole, the condition of English trade and of the Money Market during the past year has been quite as profit-

able as could have been expected. The prosperity of the revenue, especially of the Excise and Customs—which are the tests of the consumption of the people—proves that the nation is earning more money than it was, and is more comfortable. Though not as well off as we might have been, we are better off than we were.

There probably never was a war of equal magnitude with the present one that affected so slightly surrounding countries. In Prussia, the revenue returns show some increase over 1869; and in Austria the trade returns published at Vienna during the past few days, show a considerable increase over last year. Our own trade is least affected of all. In the ten months ending with October, we imported goods to the value of £203,894,233, as compared with £195,480,921 in the same period last year. In the eleven months closing with November we exported, of our own productions, £182,562,925, as against £174,450,252 last year.

The markets are always dull for the week or two following Christmas. The first periodical drug sales for the year were held on the 5th inst., when only a limited quantity of goods was brought forward, and met a moderate demand, prices generally showing little or no alteration.

The most marked feature at these sales was a brisk demand for Senna, which produced advanced rates. Camphor still continues to advance. The present stock is larger than at this time last year, being 8,257 chests against 6,273; but fully half of what is here, it is estimated, is being held back for higher prices, and as the arrivals are inadequate to meet the demand, the higher prices will probably come. With regard to Chemicals, Messrs. William Cook, jun., and Co., of Newcastle-on-Tyne, report:—For present delivery, manufacturers prices are firm, owing to the scarcity of stocks; for forward delivery a few contracts have been made for Bleaching Powder and Soda Ash at a shade under present quotations. Soda Ash in request at 1½d. to 1¾d. per cent. Bleaching Powder £9 10s. per ton, very firm. Refined Alkali and Soda crystals quiet. Chlorate of Potash steady. Bichromate of Potash and Alum easier. Other articles without change.

OILS.—The market for Linseed has again been rather firmer, having ruled at £30 to £30 5s., but closes easier, or at £30 on the spot here, and at £30 in Hull. A further advance was obtained early last month for Rape, £47 10s. having been paid for English Brown on the spot, and £48 for the first four months; since then the market has exhibited less activity, and business has been done to-day at £47 5s. to £47 10s., on the spot, but for May-June £47 10s. has been paid. There are sellers at £45 10s., for the last six and at £45 for the last four months. Refined is £49 10s. to £50, and Foreign £51. Cotton Oil has been in more demand and higher prices have been realised, viz., £33 for refined on the spot here, and a good business has been done forward up to June at £34 to £35, while £34 has been paid for Hull March to June delivery. Although the consumption of Olive Oils is increasing, the supply exceeds the demand, and keeps the prices in check. Gallipoli is worth £49 10s. to £50, Gioja, £48, Messina, £47 to £47 10s., down to £45 10s. for Mogador. Several transactions for arrival have taken place at some advance. During the last two weeks a cargo of Ionian has sold at £43 10s., a cargo of Levant at £44 10s., a cargo Gioja, Tarranto or Sicily at £44 12s. 6d., and a cargo of Candia at, it is supposed, £43 10s., all of and i. Coconut has continued to rule at £45 to £42 10s. for fine Cochin, and at £38 10s. for Ceylon in pipes, but transactions have been limited. Of 134 casks Sydney, 49 casks sold, dark to good fair, £32 to £35 10s; the remainder bought in at £34 16s, up to £37 for fine. Palm has been steady but not active at £38 10s, to £39 for fine Lagos; £36 Loando, and at £35 for Sherboro'. The demand for Crude Sperm has not revived, and it is only nominally worth £78. Whale being scarce, is firm at £33 to £36 as to quality. A small business has been done in Seal at £35 10s for pale, and at £34 10s for good tinged. Cod remains dull at £35 10s to £36. At auction 6 casks Sperm bought in at £76; also 167 barrels and 10 tuns Whale double compass, £36; nick, £33.

Petroleum has been in only limited request, and prices have slackened, there being sellers of high test oil on the spot at 1s. 6½d. to 1s. 6¾d., and of contract for the month 1s. 6d. Little or no business has been done for forward delivery. Stock 18,432 barrels and the deliveries last week were 2768 barrels. Coal Oil is without change; 1000 barrels Naphtha are reported to have been sold at 9d. to 9½d.

Monthly Price Current.

The prices quoted in the following list are those actually obtained in Mining lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at these market prices, but they may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.]

CHEMICALS.

	1871.		1870.	
ACIDS—	s. d.	s. d.	s. d.	s. d.
Acetic per lb.	0 4	to 0 0	0 4	to 0 0
Citric per lb.	2 6	.. 2 4	2 4½	.. 2 5
Hydrochlor. per cwt	4 0	.. 7 0	4 0	.. 7 0
Nitric per lb.	0 5	.. 0 5½	0 5	.. 0 5½
Oxalic "	0 3	.. 0 0	0 7½	.. 0 0
Sulphuric "	0 0½	.. 0 1	0 0½	.. 0 1
Tartaric crystal .. "	1 2½	.. 0 3	1 2	.. 0 0
powdered .. "	1 3	.. 1 3½	1 2½	.. 1 2½
ANTIMONY ore..... per ton	260 0	.. 300 0	320 0	.. 300 0
crude .. per cwt	38 0	.. 0 0	35 0	.. 0 0
regulus .. "	62 0	.. 63 0	65 0	.. 68 0
star "	55 0	.. 0 0	65 0	.. 68 0
ARSENIC, lump..... "	15 6	.. 16 0	16 0	.. 16 6
powder .. "	7 0	.. 7 6	7 3	.. 7 6
BRIMSTONE, rough .. per ton	160 0	.. 0 0	160 0	.. 0 0
roll per cwt	10 6	.. 11 0	11 0	.. 0 0
flour .. "	12 0	.. 13 0	13 0	.. 13 6
IODINE, dry per oz.	0 10½	.. 0 10½	0 9	.. 0 9½
IVORY BLACK, dry... per cwt.	0 0	.. 0 0	0 0	.. 0 0
MAGNESIA, calcined... per lb.	1 2	.. 0 0	1 2	.. 0 0
MERCURY..... per bottle	200 0	.. 0 0	137 0	.. 138 0
MINIUM, red per cwt.	21 0	.. 0 0	20 0	.. 21 0
orange "	31 6	.. 32 6	31 6	.. 32 6
PRECIPITATE, red per lb.	3 10	.. 0 0	2 6	.. 0 0
white .. "	3 9	.. 0 0	2 5	.. 0 0
PRUSSIAN BLUE .. "	0 0	.. 0 0	0 0	.. 0 0
SALTS—				
Alum per ton	140 0	.. 150 0	145 0	.. 155 0
powder "	163 0	.. 165 0	165 0	.. 170 0
Ammonia:				
Carbonate per lb.	0 5½	.. 0 6	0 5½	.. 0 6
Hydrochlorate, crude,				
white..... per ton	520 0	.. 560 0	480 0	.. 560 0
British (see Sal Ammoniac)				
Sulphate per ton	325 0	.. 330 0	340 0	.. 350 0
Argol, Cape per cwt	57 6	.. 70 0	65 0	.. 78 0
France "	0 0	.. 0 0	45 0	.. 53 0
Oporto, red .. "	22 0	.. 24 0	22 0	.. 24 0
Sicily "	0 0	.. 0 0	32 0	.. 40 0
Naples, white .. "	0 0	.. 0 0	55 0	.. 05 0
Florence, white .. "	0 0	.. 0 0	0 0	.. 0 0
red .. "	0 0	.. 0 0	0 0	.. 0 0
Ashes (see Potash and Soda)				
Bleaching powd. per cwt.	10 0	.. 10 6	8 6	.. 8 9
Borax, crude "	25 0	.. 40 0	25 0	.. 35 0
(Tincal) .. "	45 0	.. 60 0	55 0	.. 65 0
British refud. .. "	68 0	.. 70 0	69 0	.. 70 0
Calomel per lb.	3 8	.. 0 0	2 5	.. 0 0
Copper:				
Sulphate per cwt.	23 0	.. 25 0	24 0	.. 0 0
Copperas, green .. per ton	50 0	.. 60 0	52 0	.. 60 0
Corrosive Sublimate... p. lb.	2 11	.. 0 0	1 11	.. 0 0
Cr. Tartar, French, p. cwt.	88 0	.. 90 0	82 0	.. 0 0
Venetian grey .. "	90 0	.. 90 0	88 0	.. 0 0
brown .. "	0 0	.. 0 0	0 0	.. 0 0
Epsom Salts per cwt.	6 0	.. 7 0	6 0	.. 7 0
Glauber Salts "	4 6	.. 6 0	4 6	.. 6 0
Lime:				
Acetate, white, per cwt.	12 6	.. 23 0	12 6	.. 23 0
Magnesia: Carbonate .. "	42 6	.. 0 0	42 6	.. 0 0
Potash:				
Bichromate per lb.	0 5	.. 0 5½	0 5½	.. 0 5½
Carbonate:				
Potashes, Canada, 1st				
sort per cwt.	30 0	.. 33 6	31 9	.. 32 0
Pearlshes, Canada, 1st				
sort per cwt.	38 0	.. 42 0	32 9	.. 33 0
Chlorate per lb.	0 10½	.. 0 10½	0 10½	.. 0 0
Prussiate per lb.	1 0	.. 0 0	1 0	.. 0 0
red "	1 9½	.. 1 10	1 9½	.. 1 10
Tartrate (see Argol and Cream of Tartar)				
Potassium:				
Chloride per cwt.	10 6	.. 13 0	8 0	.. 0 0
Iodide..... per lb.	12 6	.. 13 0	12 0	.. 0 0
Quinine:				
Sulphate, British, in				
bottles per oz.	7 0	.. 7 3	5 10	.. 6 0
Sulphate, French .. "	7 9	.. 0 0	5 6	.. 0 0
Sal Acetos per lb.	0 10	.. 0 0	0 10	.. 0 0
Sal Ammoniac, Brit. cwt.	41 0	.. 42 6	39 0	.. 40 0
Saltpetre:				
Bengal, 0 pe cent. or				
under per cwt.	30 6	.. 31 0	22 6	.. 22 9
Bengal, over 0 per cent.				
per cwt.	29 0	.. 29 0	20 6	.. 22 3
Madras..... "	0 0	.. 0 0	20 0	.. 21 0
Bomb & Kurrachee p. et.	0 0	.. 0 0	0 0	.. 0 0
European..... "	0 0	.. 0 0	25 0	.. 26 0
British, refined .. "	32 0	.. 33 0	25 6	.. 26 6
Soda: Bicarbonate, p. cwt.	10 0	.. 0 0	0 6	.. 9 9
Carbodate:				
Soda Ash..... per deg.	0 1½	.. 0 2	0 1½	.. 0 1½
Soda Crystals per ton	77 0	.. 80 0	75 0	.. 0 0
Hyposulphite... per cwt.	18 0	.. 0 0	16 0	.. 0 0

DRUGS.

	1871.		1870.	
	s. d.	s. d.	s. d.	s. d.
Soda:				
Nitrate per cwt.	15 0	to 15 6	16 3	to 17 0
SUGAR OF LEAD, White, cwt.	39 0	.. 40 0	39 0	.. 40 0
Brown .. "	26 0	.. 28 0	29 0	.. 30 0
SULPHUR (see Brimstone)				
VERDIGRIS per b.	1 0	.. 1 2	1 0	.. 1 2
VERMILION, English... per lb.	4 2	.. 4 4	2 0	.. 3 0
China.... "	3 0	.. 0 0	2 10	.. 0 0
ALOES, Hepatic.... per cwt.	70 0	.. 210 0	60 0	.. 180 0
Socotrine .. "	120 0	.. 315 0	100 0	.. 220 0
Cape, good.. "	24 0	.. 27 0	28 0	.. 39 0
Inferior .. "	17 0	.. 23 0	17 0	.. 27 0
Barbadoes .. "	70 0	.. 200 0	80 0	.. 220 0
AMBERGRIS, grey..... oz.	25 0	.. 28 0	27 6	.. 30 0
BALSAMS—				
Canada per lb.	0 11	.. 1 0	1 2	.. 0 0
Cupivi .. "	1 7	.. 0 0	1 10	.. 1 11
Peru .. "	9 2	.. 0 0	10 3	.. 10 6
Tolu .. "	2 3	.. 0 0	2 2	.. 2 3
BARKS—				
Canella alba per cwt.	12 6	.. 80 0	20 0	.. 34 0
Cascarilla..... "	18 0	.. 32 0	22 0	.. 34 0
Peru, crown & grey per lb.	0 10	.. 2 4	0 10	.. 2 3
Calisaya, flat .. "	3 0	.. 3 4	3 9	.. 3 11
quill .. "	3 0	.. 3 3	3 9	.. 3 10
Carthagena .. "	0 10	.. 1 7	1 10	.. 1 11
Pitayo "	0 10	.. 1 6	0 6	.. 1 5
Red .. "	1 6	.. 5 6	1 6	.. 7 0
Bucho Leaves .. "	0 4½	.. 0 8	0 3½	.. 0 6
CAMPHOR, China.. per cwt.	70 0	.. 0 0	80 0	.. 82 6
Japan .. "	70 0	.. 71 0	82 6	.. 83 0
Refin Eng. per lb.	1 2	.. 1 2½	1 3	.. 0 0
CANTHARIDES .. "	5 9	.. 0 0	3 0	.. 3 2
CHAMOMILE FLOWERS p. cwt	40 0	.. 65 0	40 0	.. 72 6
CASTOREUM per lb.	3 0	.. 30 0	4 0	.. 32 0
DRAOON'S BLOOD, l. p. cwt.	90 0	.. 200 0	100 0	.. 290 0
FRUITS AND SEEDS (see also Seeds and Spices)				
Anise, China Star pr cwt.	110 0	.. 115 0	112 6	.. 115 0
German, &c. .. "	30 0	.. 36 0	25 0	.. 38 0
Beans, Tonquin .. per lb.	0 9	.. 1 4	1 0	.. 1 6
Cardamoms, Malabar				
good .. "	12 0	.. 14 0	7 10	.. 8 6
inferior .. "	0 0	.. 0 0	5 9	.. 7 0
Madras .. "	5 6	.. 10 0	4 6	.. 8 4
Ceylon .. "	2 9	.. 3 0	2 6	.. 2 10
Cassia Fistula.. per cwt.	12 0	.. 30 0	16 0	.. 35 0
Castor Seeds .. "	10 0	.. 12 0	10 6	.. 12 0
Cocculus Indicus .. "	13 0	.. 13 6	21 0	.. 22 0
Colocynth, apple.. per lb.	0 4	.. 0 6	0 4½	.. 0 8
Croton Seeds .. per cwt.	95 0	.. 105 0	46 0	.. 55 0
Cubebs .. "	22 6	.. 25 6	32 0	.. 35 0
Cummiu .. "	100 0	.. 120 0	30 0	.. 100 0
Dividivi .. "	12 0	.. 13 0	10 6	.. 12 6
Fenugreek..... "	13 0	.. 15 0	12 0	.. 17 0
Guinea Grains .. "	23 0	.. 25 0	36 0	.. 0 0
Juniper Berries .. "	11 6	.. 0 0	7 6	.. 8 6
Myrobalans "	10 0	.. 15 6	7 0	.. 14 6
Nux Vomica.... "	9 6	.. 13 0	11 0	.. 14 0
Tamarinds, East India .. "	8 0	.. 12 0	9 0	.. 14 0
West India, new .. "	9 0	.. 15 0	12 0	.. 22 0
Vanilla, large per lb.	40 0	.. 50 0	22 0	.. 30 0
inferior .. "	27 0	.. 37 0	12 0	.. 21 0
Wormseed .. per cwt.	0 6	.. 0 0	35 0	.. 0 0
GINGER, Preserved, in bond				
(duty 1d. per lb.) per lb.	0 6	.. 0 8	0 6	.. 0 8
GUMS (see separate list)				
HONEY, Chili per cwt.	36 0	.. 46 0	30 0	.. 47 0
Cuba .. "	22 0	.. 36 0	22 0	.. 36 0
Jamaica .. "	31 0	.. 52 0	31 0	.. 55 0
IPECACUANHA per lb.	5 6	.. 5 7	5 6	.. 6 0
ISINGLASS, Brazil .. "	8 0	.. 4 9	2 7	.. 4 8
Tongue sort .. "	4 0	.. 5 4	3 1	.. 4 10
East India .. "	1 8	.. 4 3	2 0	.. 4 0
West India .. "	4 2	.. 4 7	3 10	.. 4 1
Russ. long staple .. "	5 6	.. 8 0	5 0	.. 8 0
leaf .. "	3 0	.. 5 6	3 0	.. 5 9
Simovia .. "	1 6	.. 2 6	1 6	.. 2 6
JALAP, good .. "	1 8	.. 3 0	3 2	.. 3 10
infer. & stems .. "	0 6	.. 1 6	0 6	.. 3 0
LEMON JUICE ... per degree	0 1	.. 0 1½	0 1	.. 0 1½
LIQUORICE, Spanish per cwt.	0 0	.. 0 0	60 0	.. 65 0
Italian .. "	40 0	.. 60 0	48 0	.. 63 0
MANNA, flaky per lb.	3 6	.. 4 0	3 0	.. 4 6
small..... "	2 0	.. 2 2	2 0	.. 2 6
MUSK..... per oz.	16 0	.. 33 0	17 0	.. 33 0
OILS (see also separate List)				
Almond, expressed per lb.	1 1	.. 0 0	1 3	.. 0 0
Castor, 1st pale "	0 4½	.. 0 5	0 5	.. 0 0
second .. "	0 4½	.. 0 4½	0 4½	.. 0 4½
Infer. & dark .. "	0 4	.. 0 4½	0 4½	.. 0 0
Bombay (in casks) .. "	0 4	.. 0 4½	0 4	.. 0 0
Cod Liver per gall.	5 0	.. 6 0	5 0	.. 6 3
Croton..... per oz.	0 3½	.. 0 4½	0 3	.. 0 4
Essential Oils:				
Almond per lb.	42 0	.. 0 0	42 0	.. 0 0
Anise-seed per lb.	8 9	.. 9 0	9 0	.. 9 2
Bay per cwt.	65 0	.. 70 0	65 0	.. 70 0
Bergamot per lb.	8 0	.. 15 0	8 0	.. 14 0
Cajuput, (in bond) per oz.	0 2½	.. 0 3	0 1½	.. 0 2
Caraway per lb.	5 6	.. 6 3	5 6	.. 6 3
Cassia .. "	4 0	.. 0 0	5 4	.. 5 6
Cinnamon per oz.	1 0	.. 4 0	1 0	.. 4 6
Cinnamon-leaf .. "	0 2	.. 0 6	0 4	.. 0 0

1871.				1870.				1871.				1870.				
Essential Oils, continued:—								Oils, continued:—								
s.	d.	s.	d.	s.	d.	s.	d.	£	s.	£	s.	£	s.	£	s.	
Citronelle	0	2	2½	0	2½	0	2½	Con..... per tun	35	15	36	0	41	0	0	
fine.....	0	2½	0	0	2½	0	2½	Whale, South Sea, pale	36	0	0	0	40	0	0	
Clove..... per lb.	2	5	2	2	5	2	5	yellow ..	35	0	0	0	38	0	39	
Juniper	1	9	2	1	9	2	0	brown ..	33	0	0	0	35	0	0	
Lavender.....	3	0	4	3	0	4	3	East India, Fish	32	0	33	0	32	0	0	
Lemon.....	5	0	9	5	0	7	0	OLIVE, Gallipoli	49	0	10	59	0	0		
Lemongrass	0	2½	0	0	4½	0	4½	Tricaste	46	0	0	58	0	0		
Neroli	0	5	0	0	5	0	6	Levant	45	0	0	53	0	0		
Nutmeg	0	4	0	0	4½	0	10	Mogador	45	10	0	46	0	10		
Orange..... per lb.	5	0	7	5	0	7	0	Spanish	47	10	0	56	10	57		
Otto of Roses..... per oz.	12	0	20	13	0	20	0	Sicily	47	10	0	57	0	0		
Patchouli	3	0	0	6	0	0	0	COCOANUT, Cochinn. per ton	45	0	45	10	43	0	43	
Peppermint:								Ceylon ..	38	10	39	0	41	0	41	
American	15	6	16	13	6	15	0	Sydney ..	32	0	37	0	34	0	39	
English	33	0	34	32	0	42	0	GROUND NUT AND GINGELLY:								
Rosemary	1	9	2	1	9	2	0	Bombay	0	0	0	0	0	0	0	
Sassafras	3	0	0	4	0	4	6	Madras	43	0	44	0	40	0	0	
Spear-mint	4	0	16	4	0	16	0	PALM, fine	38	10	39	0	40	10	0	
Thymo.....	1	10	2	1	10	2	0	LINSEED	30	5	0	30	0	30	5	
Macoe, expressed .. per oz.	0	1½	0	0	1	0	2½	RAPESEED, English, pale	48	15	49	0	41	10	0	
Opium, Turkey	27	0	28	31	0	33	0	brown.....	46	10	47	0	39	10	0	
inferior	15	0	24	23	0	29	0	Foreign pale.....	50	0	50	10	43	0	0	
QUASSIA (bitter wood) per ton	60	0	70	140	0	160	0	brown.....	47	0	0	39	10	0	0	
RHUBARB, China, good and								COTTONSEED	28	0	33	0	29	0	36	
fine	2	6	6	4	6	8	0	LARD	73	0	74	0	76	0	0	
Good, mid. to ord. ..	0	4	2	0	8	4	3	TALLOW	35	0	0	35	0	0	0	
Dutch trimmed ..	0	0	0	9	6	10	0	TURPENTINE, American, cks.	34	6	35	0	28	6	0	
Russian	0	0	0	0	0	0	0	PETROLEUM, Crudo	0	0	0	14	0	0	0	
ROOTS—Calumba	25	0	40	30	0	40	0	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.		
China	20	0	25	30	0	40	0	refined, per gall.	1	6½	1	7	1	8½	1	
Galangal	15	0	16	17	0	22	0	Spirit ..	0	11½	1	0	1	4	1	
Gentian	23	0	24	19	0	20	0	SEEDS.								
Hellebore	22	0	30	22	0	30	0	CANARY	48	0	60	0	50	0	60	0
Orris	56	0	60	38	0	44	0	CARAWAY, English per cwt.	40	0	45	0	48	0	52	0
Pellitory	58	0	60	58	0	60	0	German, &c.	25	0	34	0	28	0	45	0
Pink	0	7	1	0	7	0	10	CORIANDER	0	0	0	20	0	22	0	
Rhatany	0	8	0	0	5	0	10	HEMP	44	0	48	0	42	0	44	0
Seneca	4	0	0	1	9	0	0	LINSEED, English per qr.	0	0	0	0	0	0	0	0
Snake	1	0	0	1	2	0	0	Black Sea & Azof	58	0	0	56	0	0	0	
SAFFRON, Spanish ..	33	0	40	32	0	40	0	Calcutta ..	66	6	0	59	6	0	0	
SALEP	110	0	0	110	0	0	0	Bombay ..	72	6	73	0	64	0	65	0
SARSAPARILLA, Lima per lb.	0	6	7½	0	6	7	0	St. Petersburg ..	55	0	60	0	61	6	64	0
Para	1	0	1	1	0	1	3	Mustard, brown .. per bshl.	0	0	0	8	0	10	6	
Honduras	1	1	1	1	2	1	6	white ..	9	0	9	6	7	0	14	0
Jamaica	1	7	3	1	11	2	6	POPPY, East India per qr.	57	0	0	55	0	0	0	
SASSAFRAS	0	0	0	0	0	0	0	SPICES.								
SCAMMONY, Virgin .. per lb.	25	0	29	28	0	32	0	CASSIA LIGNEA	98	0	112	0	120	0	130	0
second & ordinary ..	10	0	23	10	0	23	0	Vera	45	0	80	0	45	0	85	0
SENNA, Bombay	0	3½	0	0	3½	0	6	Buda	170	0	200	0	150	0	175	0
Tinnevely	0	3½	1	0	2	1	0	CINNAMON, Ceylon,								
Alexandria	0	4½	1	0	4	1	6	1st quality	2	0	3	4	2	0	3	8
SPERMACEIN, refined ..	1	6	1	1	6	1	7	2nd do.	1	6	3	2	1	8	3	7
American	1	4	0	1	6	0	0	3rd do.	1	7	3	6	1	6	3	3
SQUILL	0	1	0	0	1½	0	2½	Tellicherry	2	8	2	10	0	0	0	0
GUMS.								Cloves, Penang	1	2	1	3	0	10½	1	0
AMMONIAC drop .. per cwt.	80	0	100	210	0	273	0	Amboyna	0	5	0	0	6	4½	0	5½
lump ..	45	0	75	120	0	200	0	Zanzibar	0	2½	0	3	0	2½	0	3
ANIMI, fine washed ..	270	0	330	310	0	350	0	GINOKK, Jam, fine per cwt.	80	0	180	0	110	0	200	0
bold scraped ..	200	0	260	240	0	300	0	Ord. to good ..	33	0	77	0	36	0	100	0
sorts	100	0	200	100	0	200	0	African	29	6	0	0	25	0	0	0
dark	75	0	100	80	0	100	0	Bengal	26	0	0	0	24	0	25	0
ARABIC, E. I., fine								Malabar	23	6	26	0	0	0	0	0
pale picked ..	62	0	70	77	0	82	0	Cochin	32	0	105	0	32	0	110	0
sorts, gd. to fin. ..	52	0	60	65	0	76	0	PEPPER, Blk, Malabar, per lb.	0	5½	0	6½	0	5½	0	5½
garblings ..	25	0	45	40	0	60	0	White, Tellicherry	0	9½	1	2½	0	9	1	5
TURKEY, pick. gd to fin.	160	0	200	170	0	210	0	Cayenne	0	8½	1	4½	0	9	1	2½
second & inf.	85	0	155	90	0	160	0	MACE, 1st quality .. per lb.	3	2	3	9	3	3	4	0
in sorts ..	70	0	90	75	0	100	0	2nd and inferior ..	2	5	3	1	2	6	3	2
Gedda	38	0	44	38	0	44	0	NUTMEOS, 78 to 60 to lb.	2	8	4	2	2	8	4	0
BARBARY, white ..	65	0	70	73	0	77	0	90 to 80 ..	2	4	2	7	2	2	2	7
brown ..	55	0	57	70	0	77	0	132 to 95 ..	1	7	2	3	1	7	2	1
AUSTRALIAN	20	0	42	25	0	47	0	VARIOUS PRODUCTS.								
ASSAFETIDA, com. to gd	30	0	90	40	0	100	0	COCHINEAL—								
BENJAMIN, 1st qual.	160	0	400	280	0	460	0	Honduras, black .. per lb.	2	4	3	6	2	8	2	10
2nd ..	140	0	210	140	0	220	0	" silver ..	2	4	2	8	2	7	2	11
3rd ..	40	0	85	60	0	120	0	" paste ..	1	9	2	3	2	0	2	6
COPAL, Angola red ..	80	0	100	100	0	115	0	Mexican, black ..	2	4	2	6	2	8	3	0
Benguela ..	80	0	90	100	0	110	0	" silver ..	2	3	0	0	2	7	2	8
Sierra Leone .. per lb.	0	3	1	0	4	1	3	Teneriffe, black ..	2	4	3	9	2	9	4	0
Manilla	25	0	45	32	0	55	0	" silver ..	2	3	2	6	2	7	2	9
DAMMAR, pale ..	50	0	55	87	6	95	0	PUMICE STONE .. per ton	120	0	150	0	120	0	160	0
EUPHORBUM	13	0	14	13	0	14	0	SOAP, Castillo	35	0	0	35	0	0</		

